

# COMPUTERWORLD

## Object standards accelerate

### Microsoft blesses emerging standard

By Melinda-Carol Ballou

The Irish Republican Army was not the only group offering an olive branch in Europe last week.

To the relief of many corporate developers, Microsoft Corp. officially ended the war of words with the industry's major object standards group. The desktop behemoth is now taking part in the standards process.

At an Object Management Group meeting in Dublin, Microsoft threw

its weight behind an emerging specification that would allow its Common Object Model to interoperate with the OMG's Common Object Request Broker Architecture.

COM is the object model behind Microsoft's Object Linking and Embedding, so the specification would allow OLE and CORBA to interoperate.

The move offers hope to beleaguered programmers who have been facing the unpleasant task of implementing  
**Microsoft, page 14**

**Object**  
programming  
**ORIENTED**

### IBM pulls mainframe into new development role

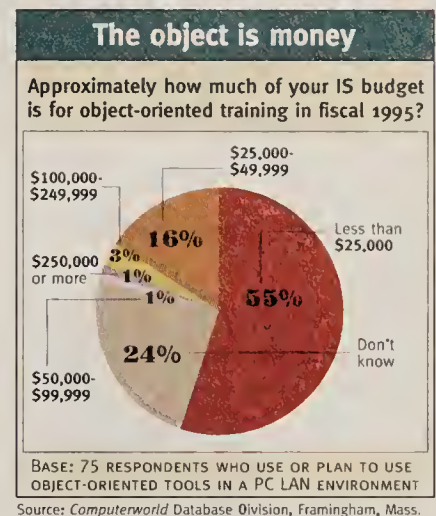
By Ed Scannell

In early October, IBM will roll out several object-based tools designed to finally and fully involve the mainframe in corporate client/server development.

The computer giant will announce versions of C++, SOM-objects, Smalltalk and an object-oriented version of Cobol for its MVS mainframe operating system, according to sources briefed by IBM. The company will also announce its own class libraries, called the Application Class Library Services. The announcement is tentatively scheduled for Oct. 4.

Final versions of these tools are expected to be available at varying dates from mid- to late 1995.

Among the select few corporate information systems  
**IBM, page 14**



## Success strains SAP support

By Rosemary Cafasso  
ORLANDO, FLA.

After 20 years of chugging alongside other conservative mainframe software vendors, SAP AG is suddenly facing the fast-paced music of success in the client/server market. Its most jarring note so

far is dealing with a shortage of consulting expertise.

The German company is emerging as a dominant force against competitors such as Oracle Corp. SAP has built a worldwide customer base of 1,800 for its 2-year-old R/3 client/server suite of integrated applications. Its Sapphire Inter-

national '94 user conference here last week drew 4,000 attendees.

Also last week, SAP announced that Pacific Gas & Electric Co. in San Francisco had signed an \$8 million contract for R/3.

"Partly what we were looking for was a client/server business system as opposed to just an accounting system," said Tom Long, controller at PG&E. "We were looking for that integration, and we wanted it all tied together. SAP met that criteria."

At Foxmeyer Corp., a pharmaceutical company in Carrollton, Texas, CIO Robert Brown said, "We are betting our company on this." Foxmeyer plans to replace a mix of legacy systems, including IBM DB2 mainframe applications and System/36s, with SAP software by the end of next year.

R/3 was part of an extensive evaluation of other client/server application offerings, but it bested the competition in volume processing, Brown said.

### Service stretch

The downside is that the R/3 market has exploded so quickly that SAP and its consulting partners are stretching to provide adequate implementation services. This is no small problem because SAP's R/3 product is a complex set of integrated applications covering financial, human resources and  
**SAP, page 129**



## Air clears for telecommuting

By Mitch Betts

Time to hit the accelerator on those fledgling plans for a telecommuting program.

By Nov. 15, large companies in the nation's snoggiest cities must have a plan for cutting employee commuting by 25% to comply with the latest federal clean air law.

The requirement will have an impact on an estimated 13 million employees in such metropolitan areas as Los Angeles, San Diego, Milwaukee, Chicago, Houston, Philadelphia, Baltimore and the New York/New Jersey region.

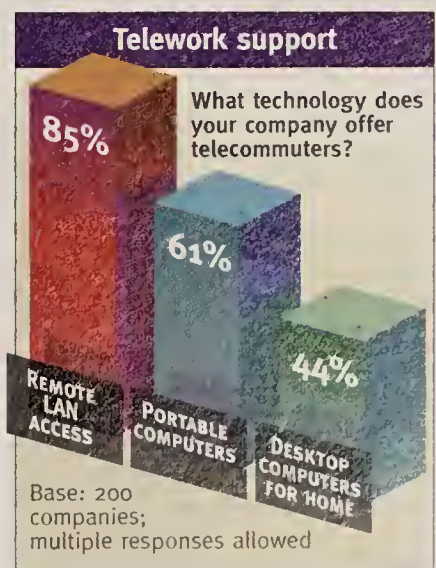
Some pioneering firms, such as Newark, N.J.-based Prudential Insurance Co. and Palo Alto, Calif.-based Hewlett-Packard Co., are gearing up to include telecommuting as part of their compliance plans.

Prudential has several business units where computer programmers and customer service agents now work from home at least one day a week, said Rita Russomano, as-

sociate manager in the insurer's clean air compliance office. "Part of the reason is clearly the Clean Air Act," she said.

"Environmental regulations are getting [business units] to start pilot programs, but then they are reaping other benefits such as reduced office space and more productive employees," Russomano added.

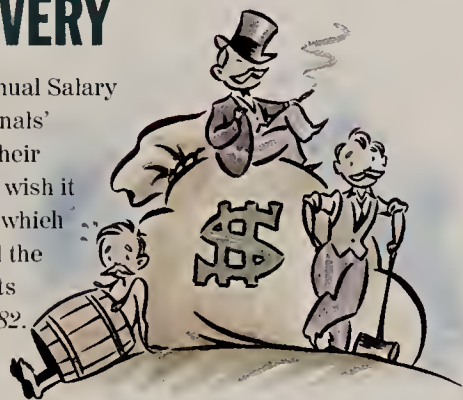
The regulations stem from a provision in the Clean Air Act Amendments of 1990 that requires employers in high-Telecommuting, page 129



## COMPUTERWORLD'S EIGHTH ANNUAL SALARY SPECIAL REPORT SURVEY

### CASH ON DELIVERY

Computerworld's Eighth Annual Salary Survey finds that IS professionals' pay is increasingly linked to their performance, and many more wish it was. Also, our readers reveal which jobs are hot and where to find the biggest paychecks and benefits packages. **MANAGEMENT, page 82.**  
Also, see **NEWS, page 20.**





## WHEN DISASTER STRIKES



PRECAUTIONS ASIDE, NETWORKS CAN AND DO FAIL — SOMETIMES IN THE MOST SURPRISING WAYS. NETWORK MANAGERS, WHO THOUGHT THEY HAD NO REASON TO WORRY, TELL THEIR TALES.

**SEE IN DEPTH, PAGE 97.**

### NEWS

- IBM is slashing prices on its **parallel System/390** mainframes after slow early sales, according to users and analysts. *Page 4*
- As processor choices proliferate in the market, vendors are experimenting with **processor-independent** boxes in a bid to address wider market segments. *Page 4*
- **Digital** readies a new PC line and PC identity. *Page 6*
- **Novell** ships Visual AppBuilder as it lets its AppWare Foundation multiplatform strategy slide. *Page 7*
- The process of moving the **Common Desktop Environment** into users' hands has bogged down in multivendor negotiations about features. *Page 8*
- **Sun Microsystems** will pay more attention to PC LANs this fall, according to Sun CEO Scott McNealy. *Page 10*
- Pen-based computing leads 15-love at the U.S. Open. *Page 12*
- While users are excited about ATM/Ethernet switching, some downplay its significance in light of ATM standards strife. *Page 15*
- Vendors try to squeeze through a shrinking window of opportunity in the **100M bit/sec. Ethernet** market. *Page 16*
- Wang, FileNet and other imaging vendors move to make **imaging development** easier. *Page 28*
- Even ardent users say DCE technology is missing some key pieces, particularly management tools. *Page 28*
- **MCI** and **Nextel** part company because of the Motorola connection. *Page 32*

### DESKTOP COMPUTING

- Compaq may have set the standard for dealing with complaints of **keyboard-related** health problems. *Page 39*

### WORKGROUP COMPUTING

- Hewlett-Packard and Zenith reach higher with new Pentium-based PC-architecture servers. *Page 47*

### ENTERPRISE NETWORKING

- Vendors start to dress up host-based E-mail with GUIs via PCs. *Page 53*

### LARGE SYSTEMS

- **Platinum Technology** ends the wait for its Integrator screen scraper. *Page 61*

### APPLICATION DEVELOPMENT

- It may be getting easier to win **patents** for innovative information systems. *Page 73*

### CAREERS

- It will be difficult for every developer — newcomers and old-timers alike — to identify the most marketable skills as client/server technology continues to take hold, says software consultant **Ed Yourdon**. *Page 100*

### MARKETPLACE

- Id Software has sold approximately \$10 million worth of software to date, mostly through a new but tricky outlet, the **Internet**. *Page 118*

### COMMENTARY

- **Charles Babcock** advises IS managers to be ready for Visual Basic; it's creeping up on them. *Page 6*. Paul Gillin bids a less than fond farewell to *Computerworld's* own legacy system and reflects on lessons learned in the move to client/server. *Page 34*
- **Patricia Seybold** shows how you can make reuse work. *Page 35*
- **Shailendra Jain** says data warehouses should be part of, not the result of, business process re-engineering efforts. *Page 35*
- **Ken Lownie** warns that Lotus and its rivals will have to deal with shifting definitions of groupware. *Page 49*
- **Frank Monteleone** finds similarities between middleware and Las Vegas' glitz. *Page 61*

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## Executive Briefing

**Your IS staff wants their pay to reflect** their performance rather than adhere to straight salary plans. Those working under pay-for-performance plans say they like the concept, and more than half of those who don't have performance-based plans would like them. Unfortunately, IS workers often said in *Computerworld's* annual salary survey that they are still dealing with modest raises, salary freezes and downsizing. *Page 82*. It may be all or nothing at the top of the heap. While the winnings can be sweet for CIOs — the top salaries are higher than ever — the risk of losing it all through turnover gets higher every year, according to two surveys. *Page 20*

**The merger of Lockheed and Martin Marietta** may result in a \$23 billion aerospace industry giant. One of the challenges the united company will face is the melding of diverse IS operations. That process is expected to take a year or more and to leave many IS staffers out of work, according to industry observers. *Page 12*

**Get ready to support more work-from-home employees.** Clean air regulations are expected to encourage more businesses to adopt telecommuting programs, with help from remote network access products. By Nov. 15, large companies in the nation's smoggiest cities must have plans for cutting employee commuting by 25% to comply with the latest federal clean air law. The requirement may have an impact on an estimated 13 million employees in such metropolitan areas as Los Angeles, San Diego, Milwaukee, Chicago, Houston, Philadelphia, Baltimore and New York. *Page 1*

**The object-oriented world may be getting its house in order.** Microsoft last week threw its considerable power behind a specification that would provide interoperability between conflicting object models: Microsoft's COM and the OMG's CORBA. Meanwhile, it appears that in October IBM will roll out object-oriented PC tools designed to bring its mainframe environments into the mainstream of client/server development. *Page 1*

**In operation less than two months,** Peco Energy's client/server customer information system has already prompted a much-needed uptick in the utility's customer service rating. *Page 28*

## The 5th Wave by Rich Tennant





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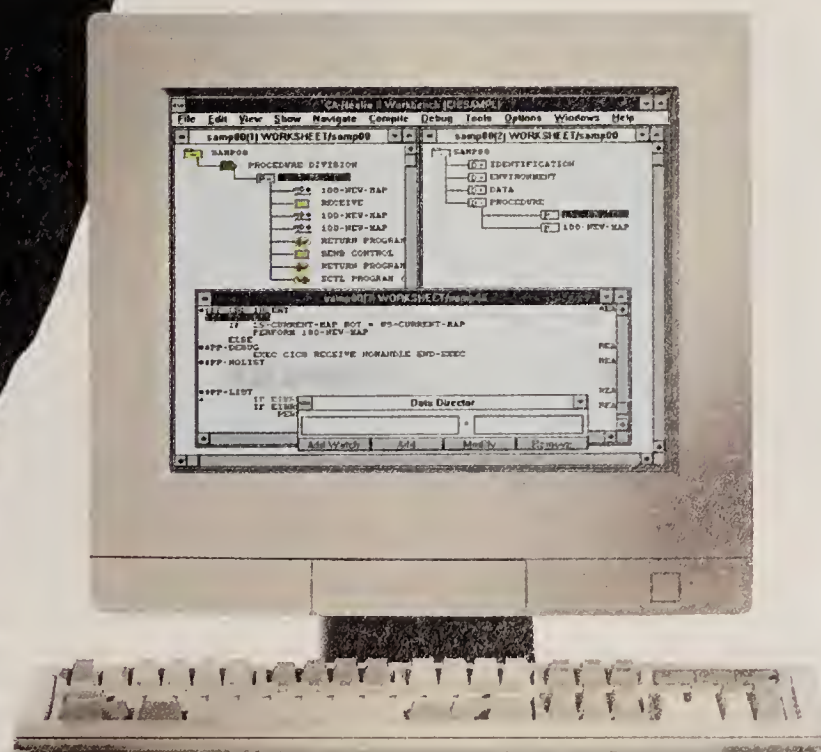
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# Parallel systems cuts follow slow IBM sales

Prices could draw previously indifferent buyers

By Craig Stedman

■ **IBM is radically cutting prices of its parallel System/390 machines after early sales fell well short of expectations, according to analysts and potential buyers.**

Prices on the CMOS-based parallel mainframes are starting to go below \$20,000 per MIPS and are expected to hit the \$15,000 per MIPS mark before year's end, said analysts at both Gartner Group, Inc. in Stamford, Conn., and Meta Group, Inc. in Westport, Conn. That would be a 40% reduction from the \$25,000 to \$27,000 per MIPS that IBM tried to charge when it introduced them last spring [CW, June 6].

IBM "didn't get many takers" at those prices and has "seen the handwriting on the wall," said Charlie Burns, research director for large computer strategies at Gartner Group. Fewer than 50 of the air-cooled parallel systems have been installed thus far, a sales level that is "not swamping their production capacity," Burns added.

## Change of mood

George Sekeley, president of CSX Technology, Inc., the information systems subsidiary of CSX Corp. in Jacksonville, Fla., was among potential users who labeled IBM's initial prices as out of line. But Sekeley said he "might get into a buying mood" if the price does reach \$15,000 per MIPS.

"When you start going down by \$10,000 per MIPS, you're talking real money,"

agreed John Foy, senior vice president of the corporate information department at New York Life Insurance Co. in New York. Only "the real innovators" would be willing to swallow the original pricing on the parallel hardware, he said.

The new hardware has to drop into the \$15,000 per MIPS price range just to make it competitive with traditional mainframes, let alone Unix systems, said Paul Quade, director of capital planning and resource management at Galileo International, an on-line reservation consortium in Englewood, Colo.

While traditional water-cooled ES/9000s are still selling for almost \$25,000 per MIPS, they have more residual value than is expected for the "throw-away" parallel systems, Quade said [CW, Aug. 8]. In other words, at the end of five years or so, users of the water-cooled systems still can resell their machines for a set amount of money.

With the parallel systems, the total life span is expected to be much shorter — two to three years, with little resale value left over. As a result, IBM's initial pricing would have left parallel System/390 users paying a higher cost of ownership over the life of their machines, Quade noted.

The parallel technology "would become a viable option" for Galileo at \$15,000 per MIPS, according to Quade. Its lack of appeal thus far has been "mostly a cost problem, because from what I've seen of the technology, it has some advantages," particularly in its ability to upgrade processors in smaller increments than the traditional ES/9000s, he said.

IBM, which no longer publishes list prices on its mainframes, declined to comment about the parallel System/390 pricing. Analysts said the company may address the issue during an introduction of low-end parallel models scheduled for Sept. 13 [CW, Aug. 1].

The transition to CMOS-based technology is an effort to reduce the cost of mainframe computing to more palatable levels. But IBM "attempted to broadcast the impression that System/390 was affordable and competitive before it really was," said Rob Schafer, a senior research analyst at Meta Group.

## Second chance?

Early parallel sales have been "nowhere near what IBM was expecting," Schafer added. Both he and Burns voiced concern that IBM may have already blown whatever momentum it was able to generate from the introduction of the technology, which is critical for attracting new applications to the System/390 platform.

But Sekeley said the immaturity of client/server technology should give IBM a second chance to make a good impression. "There's overall recognition that Unix systems and large PCs aren't handling the server part of the client/server relationship, and I think we're going to experience a major coming back to mother if mother ever becomes affordable," he said.

**"When you start going down by \$10,000 per MIPS, you're talking real money."**  
— John Foy,  
New York Life  
Insurance Co.



# Vendors explore flexibility of processor independence

By Jaikumar Vijayan

In a move that should provide users with more processor choices on standard PC architectures, several vendors are testing the waters of processor-independent designs.

Such designs will support different chip families within the same boxes. The near-term user benefit from this flexibility would be more upgrade options, analysts said.

For instance, Digital Equipment Corp. and Mips Technologies, Inc. have already announced designs that will allow users to upgrade from Pentium to faster RISC-based processors such as Digital's Alpha and Mips' R4600 processors, and others may follow.

Last week, Zenith Data Systems announced what it said is a precursor to a fully microprocessor-independent server architecture. Zenith Data's new Z-Server GT multiprocessor platform, though not specifically announced as a processor-independent system, allows users to swap different processor modules in the same box without any internal rewiring.

Future implementations of the design will allow full processor mobility among different chip types such as RISC and

complex instruction set computing (CISC) architectures, Zenith Data said. In theory, this would allow users to pull out existing x86-based processor modules and plug in faster PowerPC processor modules or other RISC chips without significant cost increases.

However, analysts, users and vendors unanimously agreed that in the near term, processor-independent designs will be more useful from a vendor perspective. The flexibility of their hardware designs will make it possible for hardware companies to position themselves in different processor segments while retaining their investments in PC designs, analysts said.

"The idea is to have an independent hardware architecture that is not significantly affected by the processor type, at no significantly extra cost," said Brian Croxon, vice president of the server business unit at Zenith Data.

## Debatable benefits

While the vendor benefits may be obvious, users familiar with this emerging trend were cool to the concept.

Processor-independent boxes "will give vendors a chance to address wider market segments, but [for] a customer, the applicability is likely to be confined to certain high-end niches," said Michael Purcell, an engineer at Baxter Healthcare Corp. in McGaw Park, Ill.

Other users said processor flexibility could give them more upgrade options, but much would depend on the cost for the feature.

"I'm basically processor-independent myself," said Chad Pearce, vice president of systems at Godwins, Boone and Dickenson in Philadelphia. "The kind of processor I use is irrelevant so long as it runs my applications."

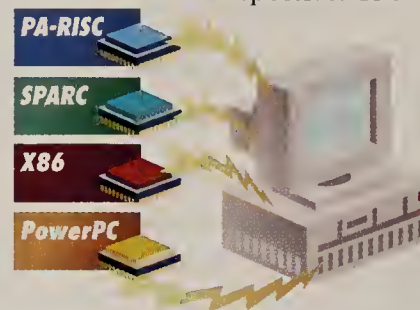
As for vendors building swappable processor features into their boxes, he added, "It really is a matter of how much of a premium you are going to be paying for that capability."

More processor-independent designs could become available as software and applications — particularly on the PowerPC platform — become available, analysts said.

This movement "is more of a response to the rattle of the PowerPC than anything else," said James Greene, an analyst at BIS Strategic Decisions in Norwell, Mass.

In addition to the vendors that have already announced processor-independent designs, desktop leader Compaq Computer Corp. has said it is working on a prototype system that can use a variety of processors that include RISC chips.

Zenith, HP have new high-end servers. See page 47.



## Ahead of the game

**W**hile several vendors are still experimenting with processor-independent designs, Digital has been shipping one for the past several months.

Its DECpc XL series of desktop computers — and more recently a server line — allows users mobility between CISC and RISC architectures within the same hardware platform.

The systems, which currently allow users to expand up to Pentium, are plug-ready to accept Digital's Alpha AXP technology, Digital officials said.

Jonathan Eunice, an analyst at Illuminata in Hollis, N. H., predicts that other processor-independent architectures are also likely to use processor cards or modules that are isolated from most functions of the motherboard, such as I/O and peripheral connects.

"In some cases, the processor card could look like a data card with its own processor logic, which users can simply swap on a system backplane," he explained.

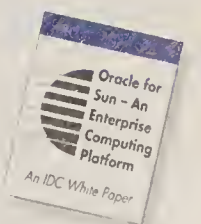
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# Visual Basic creeps up on IS

IS managers, whether they like it or not, have little choice but to pay more attention to the technologies emanating from Microsoft. They may not be aware of it, but one product is creeping into their organizations right now.

No, I'm not talking about the highly publicized beta version of Chicago or the next version of Windows NT. I'm referring to Visual Basic.

Using Visual Basic to build Windows applications eliminates the need to learn the original 600 C language functions in the Windows software developer's kit. It also provides Basic-like data types, math functions, system calls to Windows APIs, etc., saving Windows programmers from writing hundreds of repetitive lines of code.

Visual Basic has been embedded as the macro language for the Excel spreadsheet and is slated to become the scripting language of the Microsoft Office suite. Microsoft officials decline to comment on the possibility, but it wouldn't surprise me if it were built into Cairo, giving applications running under that operating system a strong common base.

In effect, Visual Basic is another core technology that will become part of the desktop environment. Just like DOS and Windows before it, Visual Basic has prompted a rush of third-party software development, creating a richer environment than Microsoft alone could sustain. When Visual Basic 1.0 first appeared, it included 16 custom controls — command boxes, option buttons, menus, etc. — that could be plugged into Windows applications. Now there are hundreds, thanks to third parties like Coromandel in Forest Hills, N.Y., Stylus Innovation in Cambridge, Mass., and Borland in Scotts Valley, Calif.

If you are an IS manager who doesn't know about custom controls or the burgeoning third-party market producing them, watch out. You may run into them in every department. Even if the Windows programming staff is spurning Visual Basic (an unlikely prospect), a few skilled end users will soon find more power in their hands. They will write macros and desktop applications, some of which will become part of the departmental infrastructure and require support.

No one knows exactly how many programmers use Visual Basic, but Dee Dee Walsh, the Visual Basic product manager in Redmond, Wash., doesn't argue if you say more than 1 million copies have shipped. Beyond the numbers, however, is the fact that Visual Basic's custom controls are infiltrating a second key Microsoft technology, Object Linking and Embedding (OLE). When used with OLE, custom controls move up from the 16-bit level to the 32-bit level and simplify OLE's tangled undergrowth.

Developers will again save many hundreds of lines of programming if they use these custom controls to call up OLE objects that serve as event drivers, editors or data binders. Many of these custom controls will be written in C++, but Visual Basic applications will be able to use them.

Custom controls will not counteract some of OLE's implicit shortcomings. They will not give OLE objects inheritance or quick adaptability of object-oriented systems such as Next Computer's NextStep. Nevertheless, they will simplify the process of creating Windows applications. And as more programmers use them, third parties will be stimulated to produce more.

If the end users at your shop primarily use Microsoft applications, Visual Basic will solve some of those irritating, cross-application issues that have persistently bedeviled IS. If not, Visual Basic's success will become an argument for becoming more Microsoft homogeneous — a development with its own dangers, but one IS may have to contend with.



## The Meta View

Visual Basic is another core Microsoft technology taking its place as a piece of the desktop environment.

Charles Babcock

Babcock is Computerworld's technical editor. His MCI Mail address is 575-2737.

# Rdb sold to Oracle

Digital database customers to see product enhancements

By Mary Brandel

The long-awaited sale of Digital Equipment Corp.'s relational database to Oracle Corp. finally happened late last week with the news that Oracle would pay \$108 million in cash for Digital's \$100 million database business.

The deal looked like good news for Digital customers.

The result "will be much better than what would have happened" had Rdb not been sold, said Wes Melling, an analyst at Gartner Group, Inc. in Stamford, Conn.

Although Rdb is said to be profitable, revenue was in "modest decline," Digital said.

## Engineers follow product

For customers, a critical piece of the deal is the 240 or so Rdb engineers, managers and support staffers who will move to Oracle. Initially, the engineers will likely focus on the promised Rdb ports to OSF/1 and Windows NT, meeting Oracle's pledge to make "significant enhancements and investments" in Rdb. But over the long term, Oracle seems more interested in borrowing the best from Rdb for its namesake database and also creating synergy between the engines, including an extended gateway.

The eventual migration path would be more of a "version upgrade," Oracle said, where one day "customers would get Oracle 10 and could just as easily view it as Rdb Version 9."

"Our intent is [for customers] to take their

[Rdb] applications and migrate them to a code base [with] substantially the same Rdb functionality that they've come to know," an Oracle spokesman said.

Query optimization, very large database technology and advanced performance features are just some of those functions. Oracle also said it would add Digital's DBA Workcenter features to its systems management tools.

Oracle would not specify a cutoff point for Rdb development. Melling said Oracle "will spend the next two years making Rdb customers very happy so when it's time to slide over, they'll say yes."

Customers are likely to have as long as seven years to migrate, he estimated. To that end, Oracle is expected to focus on two fronts: enabling Rdb application development interfaces to work with the Oracle engine and converting Rdb's stored procedures to Oracle.

The seven-year time frame works well for Citicorp, which purchased Rdb in May. "Anybody who relies on more than five years for any product life cycle is making a

mistake," said Richard Bowman, director of global operations. "Things change too fast."

Still, a goodly number of Rdb users view Oracle with some trepidation and said they do not look forward to new pricing strategies.

"We're sensitive to the issue of being accused of price gouging," an Oracle spokesman said. "On the other side, we are running a business and making an investment" in the technology.

The sale included Rdb, CDD/Repository, DBA Workcenter, Rally 4GL, DBMS and their related support businesses.

Additional announcements included Oracle 7 and Cooperative Development Environment on Windows NT/Alpha AXP; Oracle Media Server on Digital video hardware; and Oracle Workgroup Server for Windows NT/Intel.

# DEC to revamp PCs

By Mary Brandel

By January, you won't have the DECpc to kick around anymore.

This week, Digital Equipment Corp. will embark on a full revamp of its PC lineup.

Celebris, the first of the new PC lines, includes five mid-range machines geared to "advanced productivity" applications such as decision support. They will be available this month.

Analysts were uniformly impressed with the construction quality and design of the PCs. "They've done the right thing in going heavily with Pentium" on the desktop, said Martin Reynolds, an analyst at Computer Intelligence/Info-Corp. "It's not a move we've seen with IBM or Compaq."

Digital also seems to be setting the pace for out-of-box usability, with features such as setup screens and easily serviceable parts.

This type of differentiation should serve Digital well in its goal to be a Top 5 PC supplier by the end of next year, analysts said. Digital now stands at No. 10 worldwide and No. 12 in the U.S., according to Dataquest, Inc. in San Jose, Calif.

## Celebrating Celebris

Digital's PCs lead in Pentium desktop presence

	PRICE
66-MHz 486Dx2:	\$1,949
100-MHz 486DX4:	\$2,299
60-MHz Pentium:	\$2,199
90-MHz Pentium:	\$2,499
Pentium/90 full profile:	\$2,799

"Until last year, Digital PCs were a joke," Reynolds said. "They were overengineered and overpriced. But [Celebris] really hits the sweet spot of the market."

In the interest of ease of use, each Celebris PC will incorporate Plug-and-Play BIOS,

"which recognizes any new peripheral you add onto the system and minimizes downtime," said Robert Corpuz, an analyst at Dataquest.

Digital also engineered a "screwless chassis," which can be removed by unlocking two plastic clasps on either side of the box. Inside the unit, components are positioned to ease access to the hard drive, motherboard and power supply.

The lack of connectors did raise the question of reliability for Richard Bowman, director of global operations at Citicorp in New York. The bank, a large Digital customer, is testing Digital's older LPX machines and plans to order "thousands."

"We've heard about problems with [portables] because of the lack of connections and plastic parts," he said.

The Celebris packaging piqued Bowman's interest because he received his LPXs "a la carte. We had to figure out how to put it together," he said.



# Novell changes gears on AppWare plans

By Melinda-Carol Ballou and Stuart Johnston

Novell, Inc. last week released Visual AppBuilder 1.0 graphical development tools and set the stage for an announcement next week of a major shift in its multiplatform strategy for AppWare Foundation.

Novell has reorganized its AppWare Group and essentially jettisoned AppWare Foundation, the portion of its AppWare development tools strategy that included multiplatform support, according to industry and Novell sources.

Although Novell expects to continue supporting AppWare Foundation for the

are heterogeneous compilers that generate code for different platforms."

He added that Novell required such multiplatform support to speed application development for the multiple operating systems it offers. "They now have a less attractive story to tell," he said.

The primary factors leading to AppWare Foundation's demise, according to

Novell sources, included the following:

- WordPerfect's poor financial performance because WordPerfect was largely responsible for funding the work.

- Frankenburg's cost-cutting attitude. The price tag for integrating AppWare Foundation with Visual AppBuilder was too high, for instance.

One corporate developer spoke posi-

tively of how quickly his group was able to create an application using Visual AppBuilder.

"There's a big use for tools like this," said John Grossman, a project manager at a major medical center in Houston. He added, however, that his organization chose AppBuilder at least in part because it expected to be able to port the application easily to Windows from the Macintosh environment using ALMs. This has been impossible so far.

## Support sought

Novell is seeking to leverage independent software vendors and its own WordPerfect Applications Group to foster the use of Visual AppBuilder. PerfectOffice 3.0 bundles Visual AppBuilder with a library of PerfectOffice ALMs and the Visual AppBuilder tool, officials said. This will allow business users to customize applications as needed, they added.

next year or so, the company has been privately advising users not to focus on it for business applications, sources said.

Novell Chairman Robert Frankenburg is expected to present the company's full strategy for the future of AppWare and other areas at Interop '94 next week.

Novell officials refused to comment specifically, saying

only that AppWare Foundation is "under review."

While Novell's refocusing on Visual AppBuilder may meet users' low-level development needs, a glutted market and thin margins will hamper revenue generation, analysts said.

Visual AppBuilder lets developers create applications out of groups of plug-in components, or AppWare Loadable Modules (ALM). AppWare Foundation's ALMs will still be funded and supported, but the focus will be on the company's Visual AppBuilder tools.

Visual AppBuilder Version 1.0 includes roughly 80 ALMs, the AppWare Bus and the ALM Builder. The AppWare Bus is a software engine that manages and coordinates the interaction of ALMs in a finished application, officials said. The ALM Builder lets developers create ALMs in C or C++ and then use or reuse them as components in an AppBuilder application.

The demise of AppWare Foundation support means that developers seeking tools to facilitate the creation of applications for Novell's NetWare and other operating systems will have no options from Novell.

One third-party developer who requested anonymity said, "One thing that's not lacking in the world is GUI builders for Windows. But what we lack



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## News Shorts

**Chicago will debut in first half of 1995**

Microsoft Corp. officials last week said Chicago will ship during the first half of 1995. While users and analysts said last spring they did not expect Chicago, also called Windows 4.0, to be out before March or April [CW, June 13], it was the first official confirmation that the product may be released later than January or February.

**Sterling/KnowledgeWare deal changes**

Sterling Software, Inc.'s intended acquisition of KnowledgeWare, Inc. has become a whole lot less expensive. Last week, the companies said the value of the deal has been cut nearly in half, to \$5 per share from \$8 per share. KnowledgeWare reported financial results that were somewhat worse than expected and, perhaps more significantly, reported some reseller revenue before actual payment was received. KnowledgeWare's revenue for the fourth quarter was \$30.4 million compared with \$40.4 million for the same period last year. It reported a net loss of \$15.4 million for the year.

**Vendors form ATM group**

A coalition of 22 vendors joined forces last week to drive the acceptance of Asynchronous Transfer Mode (ATM) to the desktop. The group, called the **Desktop ATM25 Alliance**, wants to ensure that 25M bit/sec. ATM products interoperate with ATM products from other vendors. Charter members include the following: IBM, First Virtual Corp., Chipcom Corp., Centillion Networks, Inc., Interphase Corp. and Madge Networks, Inc.

**Oracle, Information Builders join forces**

Oracle Corp. and Information Builders, Inc. last week announced an agreement to develop middleware. Dubbed Oracle Transparent Gateway for Enterprise Data Access (EDA)/SQL, the product will combine Information Builders' EDA/SQL middleware with Oracle's database gateway technology. It will run in IBM MVS environments to allow users to connect Oracle databases with nonrelational mainframe data, the companies said.

**Gradient to deliver Novell, DCE link**

Novell, Inc. formally jumped on the Distributed Computing Environment (DCE) bandwagon last week. At a DCE developer's conference in Boston (see story page 24), a long-promised deal was announced under which **Gradient Technologies, Inc.** will link DCE to Novell's UnixWare and NetWare products. Gradient will start with a native DCE port for UnixWare that is scheduled for fourth-quarter delivery. A gateway allowing DCE clients to access NetWare servers is planned by mid-1995, Gradient said.

**SHORT TAKES** Retix, Inc. in Santa Monica, Calif., has slashed prices on its SwitchStack 5000 line of stackable Ethernet switches, which will now sell for roughly \$500 per port. . . . **Platinum Technology, Inc.** and **Tivoli Systems, Inc.** announced they will move Platinum's relational database tools to Tivoli's TME systems management architecture. The link will facilitate the management of Unix relational databases. . . . **The Boeing Co.'s Commercial Airplane Group** will use Triton, a family of client/server-based software from Baan USA, Inc. in Reston, Va., as its primary manufacturing system under a \$20 million agreement announced last week. . . . **Hewlett-Packard Co.** last week rolled out its Distributed SoftBench program, which extends HP's base SoftBench environment with tools to help customers build distributed client/server applications.

# Unix GUI hits vendor bog

Sponsors try to iron out differences, hope for spring unveiling

By Jean S. Bozman

Despite the Unix community's boisterous rallying cries last October over the Common Desktop Environment (CDE), this proposed Unix desktop interface is hardly ready to start any street fights with Windows.

Once ballyhooed as the Unix industry's competitive comeback to Windows, the final shaping of the CDE code is bogged down in multivendor negotiations over features.

The four CDE sponsors — IBM, Hewlett-Packard Co., Novell, Inc. and Sun Microsystems, Inc. software subsidiary SunSoft, Inc. — are working to resolve the differences. A final specification, originally expected by year's end, has been delayed until at least next spring.

CDE was intended to be a single-target desktop environment for software vendors that would otherwise write personal-productivity applications for Windows.

Unix desktops account for 10% to 15% of corporate high-performance desktops, said Lew Brentano, an analyst at Computer Intelligence/InfoCorp in Westboro, Mass. They account for less than 10% of the overall corporate desktop market but are growing for business and multimedia applications, other analysts noted.

**Crawling along**

Progress has slowed to a snail's pace in the X/Open Co.'s open systems standards approval process, vendors and analysts said last week. This approval is necessary because systems vendors need an X/Open test suite to verify CDE compliance.

"The perception is that the urgency is off," said Richard Jaross, president of UniForum Association, Inc. in Santa Clara, Calif. "End users are not clamoring loudly, [and] Microsoft is not breathing down everybody's neck, so there is a quiet period."

The biggest roadblocks to a common Unix desktop interface are the following:

- A final specification for CDE 1.0 is not ready for the X/Open standards group, which is based in Reading, England.
- Because CDE lacks final specifications, X/Open has not placed it on its "fast-track" review for approval or finalized a test suite for compliance.

• The Open Software Foundation has not approved funding for a follow-up CDE/Motif project that would develop the Unix desktop.

But much has changed since CDE's launch last March. Several large Unix players, including SunSoft, are planning a wave of PC-integration products that tie Windows desktops to Unix servers (see story page 10).

**Change of heart**

Some of the original CDE proponents are no longer bashing Windows desktops: The Santa Cruz Operation (SCO) announced a Windows-friendly strategy last year, and Novell is completing its UnixWare 2.0 release to unify Unix and PC LAN desktops.

Many corporate users commonly combine Windows client desktops with Unix servers and use them alongside Unix workstations. "It would be nice if all Unix workstations could have the same look and feel," said Michael Prince, director of information

systems at Burlington Coat Factory Warehouse Corp. in Burlington, N.J. "It would be even nicer if the Windows and CDE stuff interoperated."

X/Open is also working with Microsoft and Apple Computer, Inc. to link CDE, Windows and Macintosh desktops, said Roy McKean, X/Open's business development manager. X/Open's

CDE effort is now part of a larger Desktop Plus program, he said last week.

Without any palpable user demand, CDE is rapidly becoming a stand-alone option for Unix systems vendors' operating systems, analysts said. Even so, major Unix vendors such as IBM, HP, Sun, Novell and SCO said they will support it once it is finalized.

Until the CDE test suite is ready, vendors will ship major operating system releases without CDE code, said Rikki Kirzner, a principal analyst at Dataquest, Inc. in San Jose, Calif. "They're still futzing around with it, and in the meantime, the world has moved to Microsoft," Kirzner said.



**Burlington Coat Factory's Michael Prince** says he would like Windows and CDE to interoperate

Windows wanna-be	
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!	A multitasking, windows environment for multiple applications.
!	OSF's Motif 1.2 GUI, SunSoft's ToolTalk for interapplication messaging, HP's Visual User Environment.

# Novell, WordPerfect reorganize staff

By William Brandel

As rumors fly over what organizational changes Novell, Inc. Chairman Robert Frankenberg will announce at next week's Interop '94 in Atlanta, some major reassignments have already been nailed down.

In an effort to bolster Novell's flagging technical support efforts, the networking vendor has picked John Lewis, an executive from WordPerfect, the Novell Applications Group. Lewis will head up the combined companies' service and support operations.

Ad Rietveld, president of WordPerfect, confirmed that WordPerfect will split its business efforts into three major areas: a business applications division, a groupware division and a consumer products division.

While many of the aspects of the Novell/WordPerfect merger have not settled well with Wall Street analysts, this aspect struck the right chord.

"This one makes sense," said Timothy McCollum, an analyst at Dean Witter Reynolds, Inc. in New York.

Mark Calkins, former vice president of corporate and strategic marketing at WordPerfect, was named general manager of the business applications division. Calkins will head up WordPerfect's desktop applications and its PerfectOffice suite business.

Ken Duncan, former president of SoftSolutions Technology Corp., which WordPerfect acquired last year, was named general manager of the groupware division. Jeff Mallet, formerly with Reference Software, will be the general manager of the consumer products division.



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# Sun shifts strategy toward PC LANs

By Jean S. Bozman  
MOUNTAIN VIEW, CALIF.

Sun Microsystems, Inc. is gearing up to turn its Unix-based servers into administrators of enterprise PC LANs, Sun Chief Executive Officer Scott McNealy said last week.

In a nationwide teleconference with industry analysts, McNealy abandoned his longtime stance as a warrior against Windows-based PCs.

"He did take a few knocks at Hewlett-Packard and Silicon Graphics, but he didn't really demean Microsoft," said Jeffrey Canin, an analyst at Salomon Brothers, Inc. in San Francisco. Canin said

McNealy also cited Sun's recent success in having its Solaris operating system preinstalled on PCs and servers purchased by China's hospital system. The Intel Corp.-based machines are from Wyse Technology, Inc.

The strategy shift, which will play out

in near-term software announcements, positions Sun systems as enterprise servers for corporate applications and PC administration, analysts said.

The PC LAN strategy could push Sun, which increased its sales by only 9% last year, into a higher-growth market, analysts said. Yet Sun has tried to crack the high-growth PC market before by promoting its multitasking Unix workstations as superior alternatives to Windows PCs. It also sells its Solaris x86 operating system on Intel-based machines.

This time, however, Sun is spotlighting its strength in servers and networking.

"It's a very smart move on their part," said Tim McCollum, a senior vice president of research at Dean Witter Reynolds in New York, who listened to the conference. Among the key elements of the new strategy will be connectivity software, including links to Novell, Inc.'s NetWare, he said.

The LAN/server theme is part of Sun's fall agenda [CW, July 25]. Two weeks ago, McNealy, a vocal critic of Microsoft Corp.'s hold on the commercial desktop market, emphasized the importance of interoperability between Sun's Unix servers and Microsoft's Windows PCs.

"There's no war," McNealy said of Microsoft and its CEO, Bill Gates. "His machines connect to our machines; our machines connect to his machines. He's doing TCP/IP; we're doing TCP/IP. We're interoperating our objects with his. There will be lots of interoperability, lots of seamless environments."

In the first of several planned PC LAN announcements, Sun subsidiary SunSoft, Inc. last week announced an alliance with Syntax, Inc. in Federal Way, Wash. It will jointly market Syntax's interoperability software for PC LANs from Novell, IBM and other vendors.

"What we want to do is reach out beyond the TCP/IP environment to dissimilar environments — for example, [Novell's] IPX/SPX," explained Cheryl Salatino, marketing director for PC networking products at SunSoft in Chelmsford, Mass.



Sun's Scott McNealy:  
*Ending the Windows war*

## Market shopping

Strong sales for Sun's new SPARCstation 5 and SPARCstation 20 workstations pushed the firm's fourth-quarter growth to 11%. But the bulk of Sun's \$4.7 billion business is growing at only 9%, analysts said, prompting the company to look for new growth markets in PC LANs and Internet connectivity.

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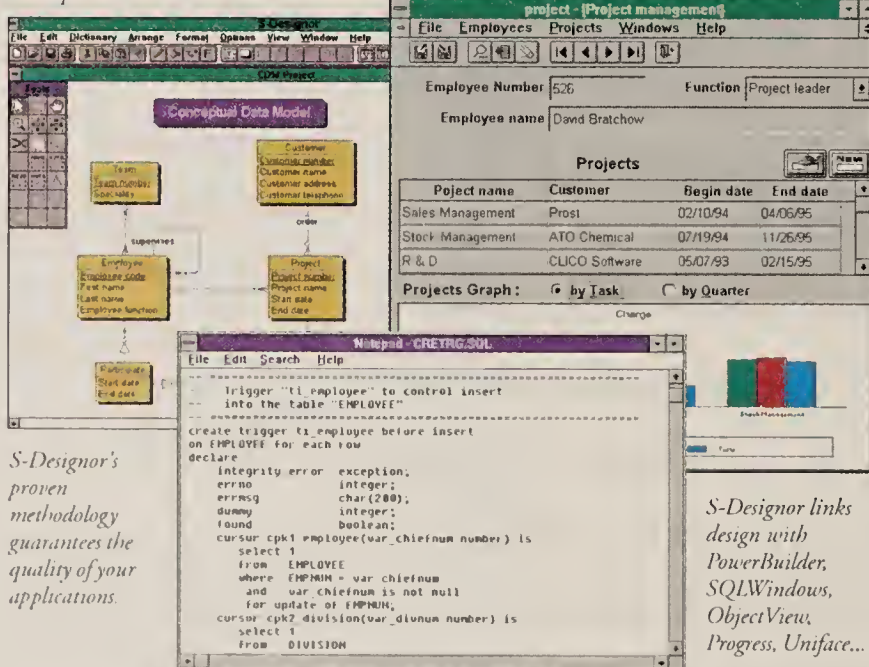
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# U.S. Open makes tennis tech history

By Thomas Hoffman  
FLUSHING MEADOWS, N.Y.

When top-seeded Steffi Graf breezed to a 44-minute, straight-set victory over Anne Mall in the opening round of the U.S. Open Tennis Championships last week, chair umpire Lynda Hinshaw was busy making tennis history.

While the defending women's singles champ drew most of the crowd's attention, Hinshaw was quietly scoring the match with an IBM ThinkPad 730T pen-based tablet umpire system. This year's U.S. Open marked the first time a Grand Slam tennis event had ever been scored without paper and pencils.

This was a dramatic departure from traditional scoring techniques that have been the standard since Richard D. Sears won the first U.S. Open men's singles title in 1881.

"Taking the scorecard out of an umpire's hand is revolutionary," said Hinshaw, a 20-year tour veteran and self-described technophobe. Because umpires were



U.S. Open umpire Leanne White uses an IBM ThinkPad to score a match at the U.S. Open last week

used to clutching pencils during the matches, the pen-based systems turned out to be less threatening than keyboard-based systems, Hinshaw said. Using the pen-based system, she added, enabled her to concentrate more closely on the match.

In the past, information from a match scored on paper had to be tabulated or keyed into a comput-

er. Now, as soon as umpires enter a match point into the ThinkPads, the data is routed via serial connections into the IBM PS/2-based scoring system used at the Open.

Although most of the matches are being scored on-line, three of the courts are not connected to the scoring system because tournament officials were unable to resolve contractual issues with local electrical unions prior to the event. In those instances, chair umpires have been downloading scores into the system immediately following the matches.

Information from the scoring system is routed to attending media, tournament officials and fans over an IBM Token Ring LAN running Novell, Inc.'s NetWare 3.11 network operating system.

## Double fault

Although U.S. Tennis Association umpires have given the pen-based systems high marks for ease of use and improved scoring techniques, a few faults need smoothing out.

For example, the Pen DOS-based systems are equipped with built-in

stopwatches that umpires were instructed to use to monitor the 20-second pauses players are allowed between points. But many of the 100 chair umpires have continued to use their traditional timepieces at crunch time.

"The stopwatch is like a pacifier for the umps. They're accustomed to using it. But we're trying to get them to use the [ThinkPads]," said chief umpire Keith Crossland.

Other umpires, who habitually gripped their pencils during tense matches, have been inadvertently holding down the mouse located on the side of the ThinkPad pens, thereby freezing the system, Crossland said.

The system's menu is also still a little kludgy. "They need to clean up the screens a little bit," Hinshaw said. The screens are overloaded with DOS-based instructions that tend to blend in with one another.

Still, tennis officials are on a learning curve with the nascent systems, which were beta-tested at a handful of tournaments beginning in May.

## Pioneering players

This isn't the first time the U.S. Open has served as a frontier for technological innovation in professional sports. At the 1992 U.S. Open, the United States Tennis Association tested an electronic calling system in which tennis balls laced with magnetic powder were tracked using a computer-based radar system. But the system was very buggy and never materialized as expected at the 1993 U.S. Open.



# Lockheed IS impact still unclear

By Julia King

Last week's announced merger of aerospace giants Martin Marietta Corp. and Lockheed Corp. is expected to close in early 1995. But uniting the companies' sprawling information systems organizations and the massive proprietary computing infrastructures they support could take a year or longer.

Meanwhile, the newly combined \$23 billion company remains under unrelenting pressure to cut costs and break into new markets. It also faces dwindling defense demand, a flat commercial aircraft market and increased foreign competition.

Last week, IS officials at both companies were short on specifics about how the merger would affect IS staffing levels and overall strategy. But according to industry observers, it does not take a rocket scientist to see that work force reductions are inevitable.

"Lockheed and Martin Marietta have duplicate staff and systems, and like most companies in defense, the systems are probably all homegrown," said Gary Osborne, chief information officer at Hughes Space and Communications Co., a rival in the satellite business.

"Integration and consolidation will be their biggest problems. They're going to have to get overhead costs down, which means one of the first things they'll have to do is move to common

systems," Osborne said.

But analysts said moving quickly could prove difficult, given the mammoth size of the new Lockheed Martin Corp. and its diverse array of core businesses, which range from manufacturing rockets and missiles to integrating commercial information systems. In some areas, such as the satellite business, the companies have overlapping operations.

"It will take six months to a year just to assess their [combined] internal resources and figure out what the left and right hands are doing," said Mark Hodges, vice president at G2 Research, Inc. in Mountain View, Calif.

Lockheed comprises 21 companies, all of which have their own IS budgets, staffs and directors.

"Our basic philosophy has been that of a decentralized company, and IS has operated along the same lines," said corporate IS director E. Daniel Remy.

As a result, "it's hard to even know where all of our IS people are because they are not in a [central] IS organization but scattered thither and yon at the various business units."

Martin Marietta restructured its IS group in 1993 following its \$3 billion acquisition of General Electric Co.'s aerospace division. The firm's internal IS unit, based in Orlando, Fla., now employs 1,500 people in Orlando and at IS sites in Denver and Valley Forge, Pa.

## Dwindling defense

### JUNE 1993

Lockheed lays off 400 workers at its commercial aircraft center

### AUGUST 1993

Lockheed eliminates 1,600 jobs

### OCTOBER 1993

Martin Marietta cuts 9,500 jobs due to Pentagon cutbacks

### MARCH 1994

Lockheed Aeronautical Systems unit announces 2,000 jobs will be cut by the end of 1995

### JUNE 1994

Martin Marietta eliminates 400 jobs at its San Diego space systems operations, two months after cutting 500 jobs in New York state

# Netlink rolls out router

By Suruchi Mohan

**Netlink, Inc. this week will announce the OmniLinux 4000 access node, which will be aimed squarely at organizations trying to integrate legacy SNA and LAN traffic.**

The OmniLinux 4000, the newest OmniLinux family member, transports SNA and multiple LAN and WAN protocols over frame relay.

Although router vendors claim their products can handle multiple protocols, most routers deal better with LAN/WAN traffic than with SNA, said Tom Nolle, president of CIMI Corp. in Voorhees, N.J.

## Addition, not replacement

Raleigh, N.C.-based Netlink is trying to exploit this market niche by offering a product that handles both kinds of traffic and eliminates the need for parallel networks. However, Nolle said, Netlink is emphasizing the role of OmniLinux 4000 as an add-on to routers rather than a substitute.

"There is an explosion of frame relay," said Audrey Apfel, research director at Gartner Group, Inc. in Westport, Conn. "It is becoming more and more popular in multiprotocol environments where SNA is a player."

Additionally, Apfel said, the economics can be attractive in that

equipment can be upgraded to support frame relay. That will also be a key interface to Asynchronous Transfer Mode (ATM), making it "future-proof," she said. A strength of frame relay is its ability to provide very good service in a multiprotocol environment.

Steve Painter, director of network services at the University of North Carolina in Research Triangle Park, said he sees OmniLinux 4000 as yet another router on his network that interfaces to Ethernet and X.25. "Right now it's not much different than having a Cisco router," he said. OmniLinux 4000 sits outside the packet-switched network that Painter uses and will ease administration once it is integrated with the packet-switched network, he said.

Tom Schneider, manager of product network engineering at Mead Data Central, Inc. in Dayton, Ohio, said OmniLinux 4000 offers flexibility to migrate to future applications. It allows users to switch between applications without having to log on again. Although Schneider's networks currently run X.25, he expects to deploy frame relay by year's end.

In addition to frame relay, OmniLinux 4000 supports X.25 and leased lines.

OmniLinux 4000 will be available this month. Pricing starts at \$4,000.



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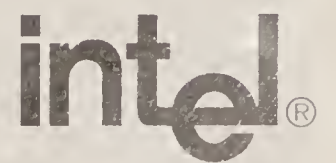
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\*45-day evaluation offer includes Intel hardware and software only. ISDN service must be purchased separately. WORLDWORX is a service mark of AT&T Corp. ProShare is a trademark of Intel Corporation.





## Wireless computing

# McCaw working out cellular kinks

By Michael Fitzgerald  
KIRKLAND, WASH.



McCaw Cellular Communications, Inc., the nation's largest cellular carrier and biggest proponent of the Cellular Digital Packet Data (CDPD) protocol, is wrestling these days with issues such as billing and user support.

Yet McCaw continues to add services to its version of CDPD — called AirData — leading some analysts to question the company's progress in this emerging area.

"I think they're really trying, and they're getting their technology together," said Andrew M. Seybold, editor in chief of the newsletter "Outlook on Mobile Computing" in Brookdale, Calif.

But McCaw's insistence on integrating its network itself and building in its own services — rather than using established service gateways such as Radio Mail — is slowing its ability to get its CDPD network up and running, Seybold said.

For their part, McCaw officials insist that AirData will be up and running in 105 cities by the

## Target users

McCaw said more than 100 companies are interested in piloting CDPD. Their focus is largely on commercial transaction-processing applications. Because CDPD is wireless, it requires no dial-up or connect time and charges users on a per-bit transferred basis, rather than minutes on line. Therefore, McCaw is targeting point-of-sale credit card transactions, taxi cabs and other companies that use short bursts of information as possible early adopters.

end of the year, though not all those cities will have interoperability. McCaw is readying a three-tiered support strategy, called AirData Technical Assistance Center (ATAC), to provide basic customer, network and engineering support.

## Questionable pricing

McCaw is also working out its billing structure for CDPD. While the company expects to price it aggressively for large customers that are pioneering the service, the huge up-front costs of CDPD-capable modems will not be subsidized, unlike the cellular phones used for voice communications.

Of more concern to users will be whether voice and data cellular users get hit with double access charges: one for voice and one for CDPD.

"That's something we're still thinking about," said Craig Kairis, director of marketing at McCaw's wireless data division.

In the meantime, McCaw officials said they will add an Internet gateway to their network and paging capabilities, called The Nationwide Paging Service Network. The gateway part of its service initiative will be called the National Customer Exchange.

## IBM

CONTINUED FROM PAGE 1

shops that have examined early versions of the products, most believe they give IBM the best chance yet of realizing its deferred dream of cross-platform application development.

Two questions that linger, however, are whether IS executives are ready to accept an invasion of object technologies into their mainframe kingdoms and whether there is enough time left on the game clock for IBM to win against a number of encroaching competitors.

"I have seen many instances where people thought object technologies should be kept in the domain of PCs when [those technologies] actually represent the best solution to the problem of handling legacy-based applications," said Bill Feraudo, senior vice president of marketing at Brooklyn Union Gas Co. in New York. "Sometimes IS people's biggest problem is they can't re-engineer themselves."

"Political battles will have to be fought because [IBM's upcoming tools] represent a radical shift for mainframers," said Kevin Godin, a senior technical analyst at Canada Trust Mortgage in London, Ontario. "But if you build a case that you can do things faster, cheaper, better, it becomes an easier sell."

Feraudo, along with a handful of oth-

er users and analysts, said he believes the IBM products will turn the mainframe into a sophisticated controller for distributing data and programs.

"In [IBM's new] object-based client/server environment, the mainframe can be about the biggest damn server you ever saw," said John Dunkle, senior vice president at WorkGroup Technologies, Inc. in Hampton, N.H. "It is a step-level function ahead of what Microsoft can do with OLE 2.0."

IBM hopes accompanying training and consulting services to help with the deployment of client/server-based applications will persuade more conservative IS shops to follow the object technology path.

More adventurous IS professionals believe their more conservative counterparts simply need to be better educated about how these technologies can address corporatewide business solutions as well as advance their careers.

"It isn't a technical problem but an educational one. Everyone understands that PCs and objects go together, but

when you talk about them being on a mainframe, everyone starts asking, 'How does it make me more productive?'" said one IS executive who is under a nondisclosure agreement and requested anonymity.

Even those shops that prefer to do most of their training in-house are strongly considering enlisting IBM's services, at least initially. The company will reportedly offer extensive for-

mal classroom training, and it will send teams of programmers to user sites for as long as users feel it is necessary.

"It is our experience that these proposed consulting and training services come down basically to their accommodating whatever you need," Godin said. "I believe they will offer formal classroom training as well as flying tech people up to your shop for a few weeks if need be."

To better manage the training costs, most IS executives plan initially to let only a few departments begin development with the products. If the results are good, they will gradually roll them out across the enterprise.

## Beyond loyalists

While IBM may win over many loyal accounts, some industry observers are skeptical about how many accounts the company will conquer outside its kingdom.

Some believe IBM's chances look tentative at best as IBM faces a competitor like Microsoft Corp. with its slew of object technologies such as Object Linking and Embedding (OLE), a distributed version of OLE and the object-oriented successor to Windows NT, code-named Cairo.

"There are a very small number of organizations that are taking IBM's strategy seriously. The technology is good, but it is not being adopted widely," said Rich Finkelstein, president of Performance Computing, Inc. in Chicago. "IBM is good at building structures and architectures, but where are their applications?"

**Getting ahead careerwise** in a client/server environment. See page 100.

## Microsoft

CONTINUED FROM PAGE 1

ing different object models on different platforms. Until last week, Microsoft said it would rely on other vendors — notably Digital Equipment Corp. — to provide the links between object models. But now Microsoft itself and primary developer Candle Corp. will provide those links along with support from Digital.

Glenn Shimamoto, a vice president at Bankers Trust Co. in New York, said he views this move as "very positive."

"This opens up interoperability to the world outside of Microsoft and back into it as well," he noted.

Reynaldo Gil, a senior technical analyst at Charles Schwab & Co., agreed. Microsoft is "starting to realize that to play the enterprise game, they have to integrate with other platforms and standards. They can't just provide a single-vendor solution for everything."

But the specification must still go through the OMG standards process. The OMG will accept other potentially competing proposals and then hammer out the actual specification within the next six to ten months, OMG officials said.

## Directing objects

CORBA acts as a kind of traffic cop for objects across the network and is supported by nearly all major systems vendors, including IBM, Sun Microsystems, Inc. and Hewlett-Packard Co. OLE is Microsoft's technology for managing compound documents and objects on Windows. It is expected to ship in a distributed, multiplatform release for developers next year, Microsoft officials said.

The current proposal from Candle and Microsoft, which Digital backs, sets up interoperability via semantic mappings, or a translation process between CORBA and COM. The process uses COM's Object Remote Procedure Call and an object adapter that will be part of CORBA 2. CORBA 2, the next release of CORBA, will provide interoperability among implementations of the OMG standard. It is due later this fall.

Eight other corporate developers interviewed last week agreed that the announcement of Microsoft's participation in the process has the potential to solve critical and worrisome interoperability problems.

"I think this is excellent. There have been a number of alternatives for OLE-to-CORBA solutions, but the candidate will be successful only if Microsoft participates," said Don Reuke, computing systems adviser at the Mobil Exploration and Producing Technical Center Division of Mobil Oil Corp. in Dallas. Mobil's object technology use is split: Its business side plans to use OLE on PCs and its technical side plans to use CORBA on Unix workstations.

"It's important that we be able to communicate" between the object environments, Reuke said.

## Changing spec

Late last year, Microsoft and Digital said they would jointly offer a standard for interoperability between OLE and CORBA. Last month, however, the companies offered a specification for industry review that did not address that issue. Digital officials said the current proposal is a "natural outgrowth" of their work with Microsoft.



# Agile joins switch brigade with ATMizer

By Stephen P. Klett Jr.

Yet another vendor has ridden out of nowhere and wrapped its tether around the Ethernet/Asynchronous Transfer Mode (ATM) switching post.

Agile Networks, Inc. last week unveiled a switch for building local ATM backbone networks that combines routing, switching and packet-to-cell conversion functions. The move follows similar announcements from NiceCom, Inc., Xylan Corp. and Centillion Networks, Inc. during the past month [CW, Aug. 29].

Agile's ATMizer 125 Relational Switch meshes an ATM switch with up to six 155M bit/sec. ports and a 12-port Ethernet LAN switch with routing and management software.

Observers said the combination of LAN and ATM switching and routing software offers simplicity to users, who can

reduce the number of routers and high-end hubs in their networks.

Boston University plans to beta-test the switch. ATMizer "will provide us with the ability to preserve our existing investment in

routers while giving us the flexibility we need to upgrade those users to ATM [who] need it the most," said Charles Von Lichtenberg, data communications manager at BU.

The \$36,000-and-up switch will begin beta-testing in October, with general availability set for the first quarter of next year. In addition to BU, Argonne National Laboratory in Argonne, Ill., and Bear, Stearns & Co. in New York have signed up to test ATMizer. Agile will also offer software called ATMman to help users set up and manage switched virtual networks.

## Cause or effect?

Users and analysts fell on either side of the chicken-and-egg debate when evaluating such products' potential in today's networks. Some claimed products such as ATMizer were essential to move ATM forward, while others cautioned against committing to the technology until standards are more solid.

"This is a very timely introduction given the state of the market," which is shifting from a pure technology focus to making ATM work with users' networking gear, said John McQuillan, president of McQuillan Consulting in Cambridge, Mass. "We know ATM is going to be great in the future; the challenge is the transition — how to get there. Products such as this will help."

However, many vital ATM standards, such as LAN emulation, remain far from complete despite the feverish efforts of the ATM Forum in Mountain View, Calif.

Standards are expected to be set with-

in the next year, but that is too long for users such as Bear, Stearns to wait.

"Six months in our business is worth six years in any other industry from an information processing standpoint," said Jeff Marshall, senior managing director at the New York brokerage. "Wall Street makes its living evaluating risk, so we look at new technology in a different

light. We can't allow our business to be impeded by a lack of technical progress."

Like Bear, Stearns, Argonne is looking at ATMizer to help it push ATM beyond the experimental stage.

"We've got 3,000 Ethernet users who would like to play in the same [ATM] playground we're building for a chosen few," said Timothy Kuhfuss, a member of Ar-

gonne's electronic and computing technologies division.

Others remain unconvinced of ATM's benefits and are relying on more familiar technology.

"ATM is still a pipe dream, as is 'fast' Ethernet," said Ron Willhoite, network administrator at BSW International, Inc. in Tulsa, Okla. "We think the way to go is [Fiber Distributed Data Interface] to the desktop. It's there, it's working, and I know people who are running it."

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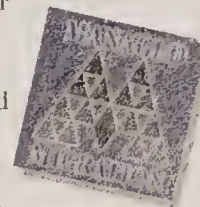


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# 3Com, Grand Junction speed toward Ethernet

100M bit/sec. networking technology feeling ATM pressure

By Stephen P. Klett Jr.

3Com Corp. and Grand Junction Networks, Inc. last week made moves to take advantage of what observers said may be a shrinking window of opportunity for "fast" Ethernet in light of falling Asynchronous Transfer Mode (ATM) prices.

Starting with 10/100M bit/sec. Peripheral Component Interconnect and Extended Industry Standard Architecture adapters, 3Com will roll out a slew of "fast" Ethernet products during the next two years. The offerings are designed to provide users with an end-to-end 100M bit/sec. Ethernet network, said Dave Tolwinski, vice president of 3Com's switching division, formerly Synernetics, Inc. in Billerica, Mass.

Meanwhile, "fast" Ethernet pioneer Grand Junction in Fremont, Calif., unveiled a \$400 full-duplex option, called CollisionFree, for its line of FastSwitch 10/100 switches. The option doubles the switches' data transmission capabilities. Grand Junction also unveiled a \$549 full-duplex adapter. Both products will be available next month.

## To wait or not to wait

Yet some observers said free-falling ATM prices raise the question of whether it would be better to wait a year or two and go with ATM, rather than put in 100M bit/sec. Ethernet now. IBM, for example, recently introduced 25M bit/sec. ATM for roughly \$1,200 per desktop [CW, July 4], about the same price as a 100M bit/sec. Ethernet connection.

"Users are looking at 'fast' Ethernet products today and asking, 'will ATM make this a flower pot in two years?'" said Tom Nolle, president of CIMI Corp. in Voorhees, N.J.

The main point in 100M bit/sec. Ethernet's favor is the unstable condition of crucial ATM standards, which likely will not be completed until late next year.

The two 100M bit/sec. Ethernet standards — 100Base-T from the Fast Ethernet Alliance and 100VG-AnyLan from Hewlett-Packard Co. and IBM — are on track for draft completion by year's end.

To boost users' confidence, companies such as 3Com and Grand Junction are moving quickly to get their products to market during this one- to two-year window before ATM gets on its feet, analysts said.

## Betting on Ethernet

And some users are not willing to wait for ATM.

"We're confident Ethernet is going to be the way to go in multiplatform environments," said Paul Bretton, wide-area network manager at Intuit in San Diego, which plans to eventually use all 3Com products to support its mixed IBM PC and Macintosh environment. "The performance is great for roughly two times the cost of 10Base-T. You can't beat that today." Intuit expects to get at least five years out of its "fast" Ethernet investment, he added.

The 3Com cards will be followed by router interfaces, hubs and switches. The adapters will cost less than \$300, and hubs will carry a price tag of less than \$250 per port.

## ATM on the horizon

While 3Com may have its eye on "fast" Ethernet, it has not forgotten ATM. Look for the company to ship ATM interfaces for its NetBuilder II router and LANplex hub by year's end, followed by an ATM backbone switch in the first half of next year.

# Microsoft keyboard gives Windows users ergonomic option

By Jaikumar Vijayan

How much value can a vendor add to something as prosaic as a keyboard?

Plenty, according to Microsoft Corp., which this week will announce its Windows-specific Natural Keyboard.

The keyboards will be available in early October through authorized distributors and resellers, retailing for about \$99.

Ergonomically, the larger-than-usual keyboard is an improvement over existing designs, said users who have been testing it for the past few weeks. For example, the keyboard's split and outwardly rotated keypads encourage users to maintain a straight wrist position, while the width and angle of the keyboard keep shoulders straight and arms relaxed, said James Greene, an analyst at BIS Strategic Decisions in Norwell, Mass.

## Sitting pretty

"Without being imposing about it, the keyboard forces you to sit in a more natural position," he said.

"It's neat," said William Kriner, a departmental computerist and network coordinator at US West Communications in Seattle. "Its functionality matches its rather strange design."

Kriner, who said he tested the keyboard for about two weeks, liked the documentation that went along with it.

He expressed some concern,

however, about the Windows-specific nature of the keyboard. "I don't know about the concept of hardware getting specific to software — that's kind of on the edge," said Kriner, citing the keyboard's lack of applicability in non-Windows environments.

Software features on the 104-key Natural Keyboard allow users to "streamline Windows computing," according to Microsoft. Two Windows-specific keys provide users with single-key access to a new Task Manager. A



The larger-than-usual keyboard is an improvement, beta users say

third application key will give users the ability to program application-specific functionality into the key when Microsoft ships later versions of Windows.

So far, Dell Computer Corp., Zenith Data Systems and Midwest Micro have announced that they will ship the keyboard with their hardware, a Microsoft spokeswoman said.

Compaq puts usage warning labels on its keyboards. See page 39.

# CompuServe unveils Internet strategy, adds support services

By Ellis Booker

CompuServe, Inc. President and Chief Executive Officer Maury Cox last week outlined the information network's strategy for providing expanded Internet access.

Although CompuServe already offers Internet mail and Usenet news groups, the service will add different communications protocols to the mix.

## Web company

In addition, company officials said CompuServe, based in Columbus, Ohio, will likely fund a new company dedicated to providing World-Wide Web consulting, servers and

services. Some CompuServe information content will be made available in the Web format, and CompuServe revealed it is testing a prototype Web page that will be generally available to subscribers in the first half of next year.

"It's safe to say all the consumer on-line services are developing Web pages as well as Internet access centers," said John Aronsohn, a consumer communications analyst at The Yankee Group in Boston. For instance, White Plains, N.Y.-based Prodigy Services Co. is soon expected to announce the availability of a Web page.

Aronsohn, however, noted it

would be "very tough" for CompuServe to compete against the less expensive Internet providers that charge, on average, \$1 per hour. CompuServe's standard fee structure is \$8.95 per month for unlimited access to a basic group of services, plus \$9.60 per hour for 9.6K bit/sec. or 14.4K bit/sec. access.

In fact, pricing details for the Internet access offering were not disclosed last week.

## Easy does it

Still, some users have been eagerly awaiting the CompuServe Internet support. "I've salivated reading about the databases that are available on the Internet," said Albert Glaser, a retired management consultant in Chicago. "But it's been my impression it

## 'net encryption

Promising a way to conduct secure credit-card transactions over the Internet, Seattle-based Spry, Inc. announced an encryption system for Visa, MasterCard and American Express under Air Mosaic, its version of the graphical Internet browser. Demonstration copies are available at ftp.spry.com; the fully enabled software costs \$29.95.

isn't as easy to use as CompuServe."

CompuServe's expanded Internet access will be rolled out in November. It will go first to commercial customers of CompuServe's Network Services Division, who will get dial-up access via the Point-to-Point Protocol — up to 14.4K bit/sec. and now-under-testing 28.8K bit/sec. speeds. TCP/IP access via CompuServe's frame-relay and X.25 services will also be available.

By the end of the year, the 2.25 million subscribers on CompuServe's Information Network will join the party, getting both telnet and File Transfer Protocol sessions.

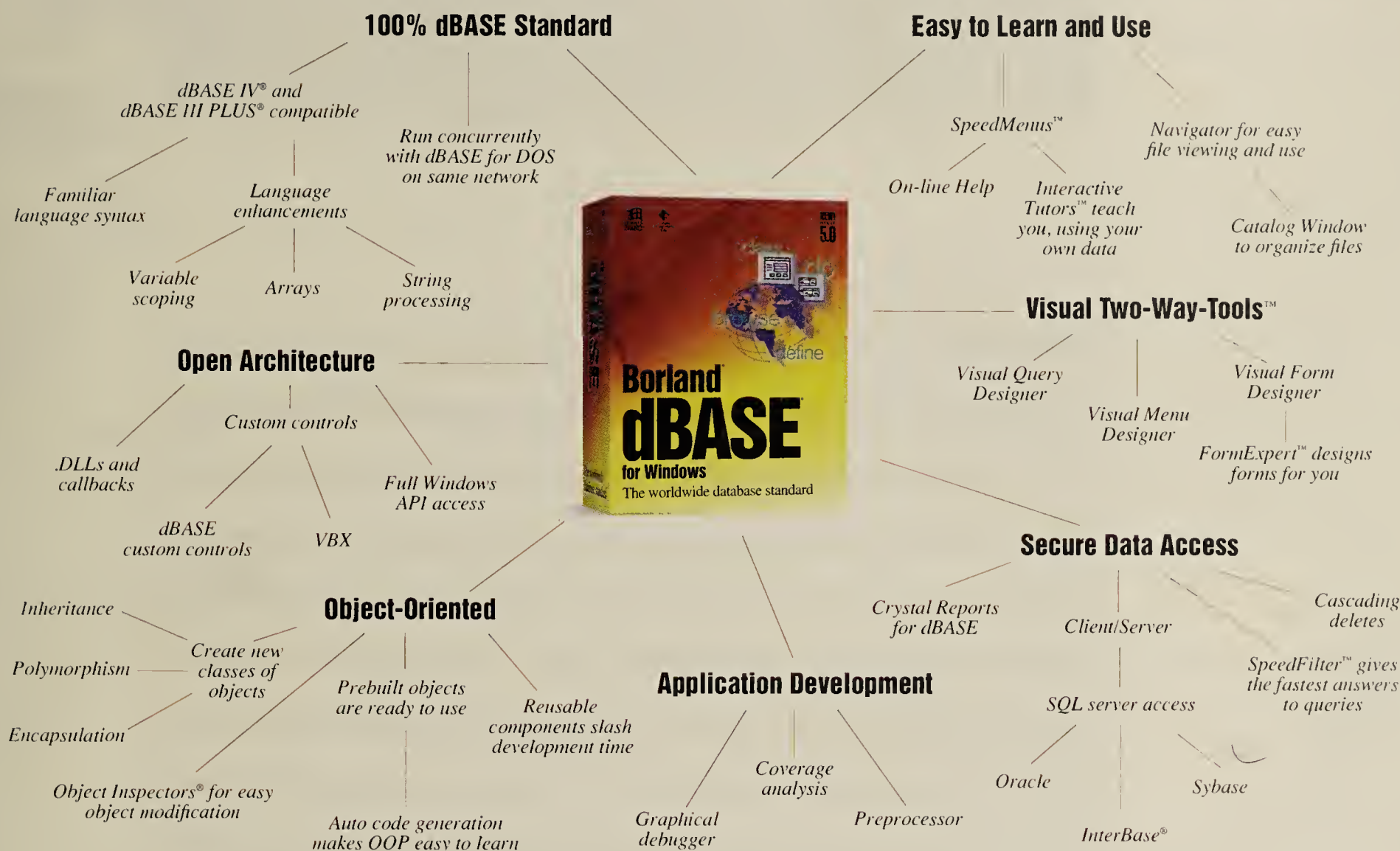
Selling products over the Internet. See page 118.





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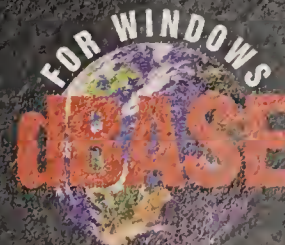


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# CIO turnover remains high

By Rosemary Cafasso

It takes a gambler to stay on top of the information systems profession these days.

A case in point: Perlin Associates, a management consulting firm in New York that has performed chief informa-

tion officer compensation surveys for 15 years, recently published its 1994 survey. It showed, for the first time, top-level IS executives bringing in more than \$1 million in cash compensation in base salary and bonuses alone.

Then consider Deloitte & Touche's Sixth Annual Survey of North American

CIOs released earlier this year. That survey showed turnover was up again — 18.8% in 1993 compared with 17.5% in 1992. In the last three years, about one-third of the predecessors of CIOs surveyed were either dismissed or demoted, Deloitte & Touche reported.

So while the winnings can be sweet,

the risk of losing it all increases every year.

The CIO slot "isn't a dead-end street like it used to be," said DuWayne Peterson, an independent consultant and former CIO at Merrill Lynch & Co. His annual compensation once topped \$1 million at the brokerage firm. "I was not overpaid on the scale of Merrill Lynch... but I am seeing the whole salary level going up in retail, construction and so on."

But the issue is not just getting those attractive compensation packages, it is hanging on to them. Several industry observers said a key factor in the trend toward better compensation is the high turnover rate.

"In the world in general, the risk is proportional to the gain," said Warren Harkness, director of total quality at Bose Corp. in Framingham, Mass., and president of the Society for Information Management. "To some extent, some of it might be labeled as danger pay."

With the risks so high, IS executives are seeking better compensation packages, and companies are often willing to fork over the dollars to get a high-quality CIO.

"If someone was reeruiting me, I would demand a pretty strong contract because of the risk factor," said one CIO at a manufacturing company who requested anonymity. "It's a highly sensitive and political job."

## Average salary

In *Computerworld's* Eighth Annual Salary Survey, released this week (see story page 82), the average CIO compensation was \$108,035 based on 908 survey responses. Companies ranged from \$500 million-plus corporations to small not-for-profit organizations.

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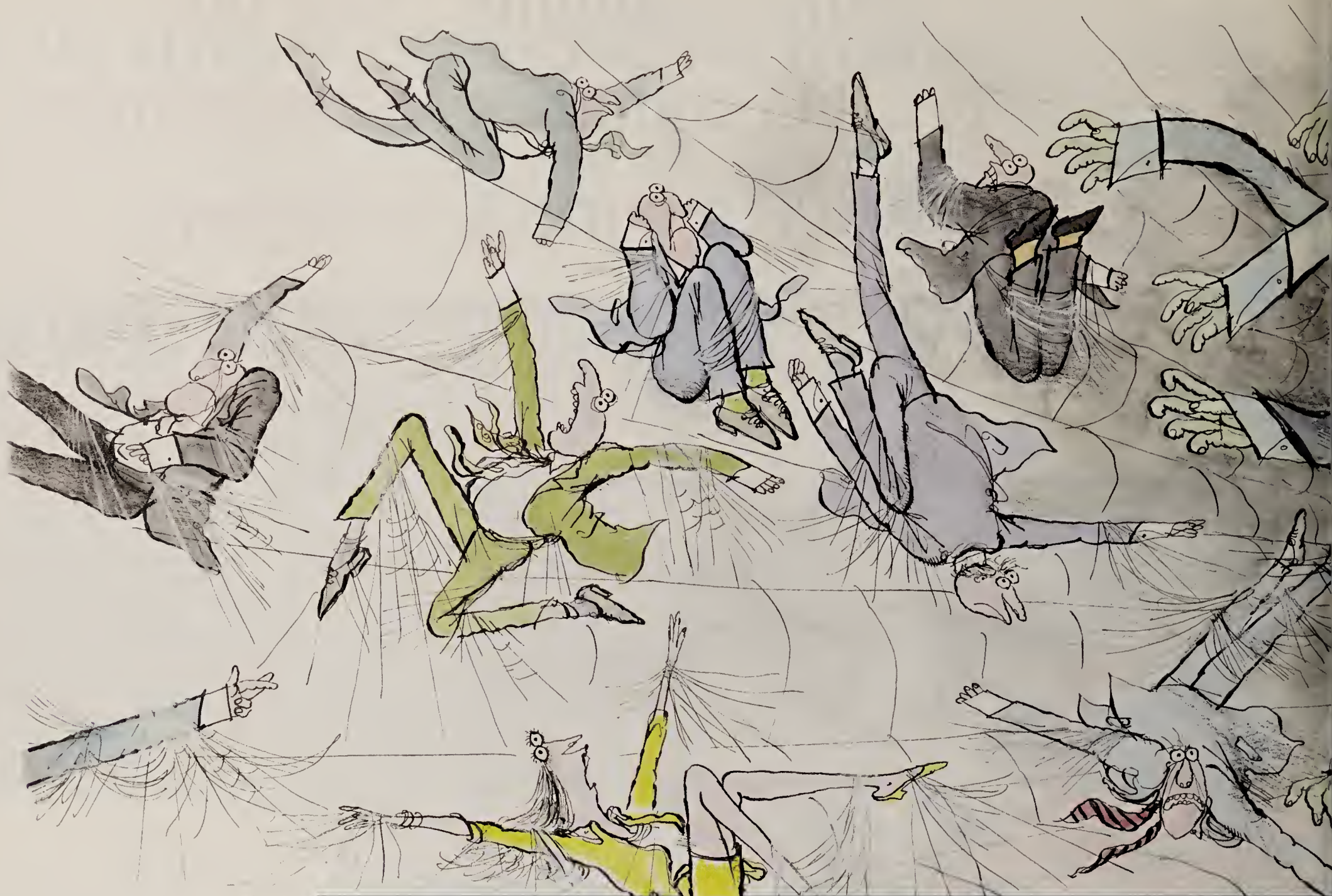
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# DCE holes still remain, users say

By Craig Stedman  
BOSTON

The lack of network and systems management capabilities for the Open Software Foundation's (OSF) Distributed Computing Environment (DCE) emerged as the top concern among users gathered

here last week for the inaugural DCE developer's conference.

Even early users who are ardent DCE fans — and about 600 of them flocked to the conference — said the technology still lacks critical pieces, with management tools topping the list.

Development tools are in short supply

as well. Still, that picture is brightening, with vendors such as Open Environment Corp. and Open Horizon, Inc. releasing products for DCE, a pioneering middleware technology developed by the OSF. DCE is supposed to enable customers to distribute applications across multiple computing platforms.

Other concerns cited by users included DCE's performance and a lack of clear support from some major systems vendors.

"We can deploy [DCE] much faster than we can manage it. That's a real challenge," said Ted Hanss, director of the Center for Information Technology Integration at the University of Michigan in Ann Arbor.

Unix-based network management tools are available from IBM, Hewlett-Packard Co. and other vendors. But the OSF's effort to create a common Distributed Management Environment (DME) framework fized earlier this year when the nonprofit consortium scaled back and halted internal development work. The object-oriented DME framework would have glued together a set of five distributed systems management applications the OSF completed in late 1993.



**University of Michigan's Ted Hanss:** Still 'holding out for DME-like capabilities' from group of vendors

## Slow-motion approach

Michael McGlynn, a technical staff member at Mitre Corp.'s Eatontown, N.J., software engineering center, agreed that a DME approach is needed to make DCE more useful. But he was not optimistic. "Right now, it seems like the vendors have kind of dropped the ball on it," McGlynn said.

Lance Travis, DME business area manager at the OSF, said the organization is lobbying its sponsoring vendors — which include IBM, HP and Digital Equipment Corp. — to develop a common set of objects for linking the DME applications using the Object Management Group's Common Object Request Broker Architecture. Even if the vendors agree, however, that work would probably not begin before next spring, according to Travis.

For now, most companies are adopting a slow-motion approach. Aluminum Company of America (Alcoa) in Pittsburgh has been working with DCE and forerunner technologies for two years, but its commitment is still only "directional," said Robert Holtgraver Jr., a senior staff systems architect who heads the firm's distributed computing lab.

"We've kept [DCE] at a directional level until the need for it is more clear," Holtgraver said. Alcoa is also "waiting for a good GUI to show up that would let you learn DCE without groping toward paper models," particularly for systems management, he added. Currently, Holtgraver said he has to do management with a Unix command line interface and "a good hand-drawn map of what I have" installed in prototype DCE applications.

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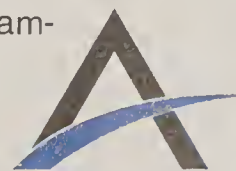
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# Utility revamps customer service systems

By Julia King

For years, Peco Energy Co. has ranked dead last in customer service, consistently racking up more consumer complaints and violations than any other utility in Pennsylvania. Now, all of that is expected to change abruptly under a \$26 million customer information system that was designed, developed and deployed by the Philadelphia gas and electric utility in less than six months.

The new client/server system, part of Peco's Re-engineering Into Service Excellence (RISE) program, was brought on-line July 15 for 75,000 of the company's 1.6 million customers. If all goes as planned, the system will be fully operational by Jan. 1, exactly one year after it was first discussed.

"Our basic philosophy from a re-engineering standpoint has been that this can't take forever," said John Steinmetz, group IS manager for customer fulfillment. "From the beginning, we knew we wanted to do releases in six-month chunks."

## Future unknown

Also driving the breakneck pace at Peco — and at all utilities — is the prospect of further deregulation.

"The Energy Policy Act of 1992 deregulated our wholesale business. What's coming down the pike is the same thing for the retail side," Steinmetz said. "No one knows when, but everyone in the industry assumes it will happen."

When it does, Peco — whose multibillion-dollar investment in nuclear power plants makes it one of the highest-cost electric utilities in the country — has little chance of competing on price. Instead, it hopes to win customers with outstanding customer service.

"We recognize our rates are high, but we believe we can create a differential through superior customer service," said Dave DeCampi, RISE project director.

Whether that actually works in the long run remains to be seen, said Brian Madden, director of CSC Index, Inc.'s national utilities practice in Cambridge, Mass. Compared with other utilities, Peco has been slow to the gate with customer service initiatives.

"[Peco's] strategy is to make customer service so good that customers will not want to switch, and that's where IS can play a role," Madden said. "It's sort of a holding-pattern strategy, but [it's] better than the strategy they've got. They're terrible to do business with."

To turn things around, Peco began weeding out workers unsuited to customer service positions by administering customer service aptitude tests to employees who had contact with the public. Last month, the company announced that 370 of 970 employees given the test had failed. Last week, it said it would reassign or terminate those workers.

On the IS side, Steinmetz said a total of about 50 developers worked on the new customer service system. Holed up at a site separate from the company's 270-person IS organization, they mainly used Powersoft Corp.'s PowerBuilder front-end tools. They also worked side by side with meter readers, repair technicians, customer support staff, business managers, administrators and outside consultants, all of whom had a hand in changing the overall customer service process.

"Working this way, there were no surprises, and we

didn't have the traditional pass-the-baton learning curve," said Marianne Albinese, CSC Index's lead information technology consultant on the project. "Because of the joint partnership on day-to-day development, we delivered a suite of applications in three months that are actually working now with real customers."

Customer support staffers access these applications from PCs running the OS/2 operating system. These are linked at the back end to an IBM DB2 relational database that contains virtually all subscriber information, including written correspondence scanned into account records via an integrated imaging system. Under an integrated scheduling system, customer service workers can also set appointments for maintenance calls, something that was not possible under the outgoing terminal-to-VTAM host system.

## Working on problem areas

Customers' biggest complaint has been being transferred from clerk to clerk, none of whom could fully answer their questions because they did not have all the information needed to do so, Steinmetz said. Under the new system, the goal is to answer 90% of customers' questions on the first call.

In the six short weeks that the system has been up and running, Peco already has observed a noticeable uptick in its customer service ratings, according to DeCampi. "The change is not statistically significant, but at this point, I'm calling it encouraging," he said.

Peco will continue to monitor its customer service rating through January 1995.

## Uncertain future

The 1992 Energy Policy Act allows wholesale energy customers to buy from whichever supplier they choose. The government is expected to extend the same opportunity to retail buyers such as shopping centers and manufacturing plants. When it does, utilities will be stripped of their captive customer base.

# Wang deal aids developers

By Mary Brandel



Contrary to the conventional wisdom, some things in life are getting easier. And one of those things is imaging.

In the past several months, at least two leading imaging vendors have hooked up with popular development tool makers to ease the traditionally burdensome job of developing image-enabled applications. Wang Laboratories, Inc., one of those vendors, will take another step in this direction later this month when it announces that its Open/image family will link with Gupta Corp.'s SQLWindows environment.

The negotiations, confirmed by Wang last week, may result in a deal that goes beyond that link. But neither company would provide specifics.

Late last year, Wang started shipping icon-based development kits that programmers can use in Microsoft Corp.'s Visual Basic or Powersoft Corp.'s PowerBuilder environments to access the capabilities of Open/image.

The result is that developers "don't have to be C language gurus to do imaging," said Bob Larrivee, an analyst at BIS Strategic Decisions in Norwell, Mass.

"A Visual Basic person can set call routines for images in an environment that's

familiar to a Visual Basic user," said Scott McCready, an analyst at IDC/Avante in Framingham, Mass.

Traditionally, imaging systems subjected developers to "incredibly cumbersome scripting languages," said Nathaniel Palmer, an analyst at Delphi Consulting in Boston.

## A link for developers

FileNet Corp. is on a track similar to Wang's. In April, it announced it would provide Workflo Controls for Visual Basic, a set of custom controls that let developers tie in with FileNet server applications within Visual Basic. The product is in beta testing and will be available in 45 days, a spokesman said. A kit for PowerBuilder is not yet available, but it would be "a natural next step," he said.

Wang has the widest variety of development tools for all levels of programmers, Larrivee said. Application programming interfaces are geared toward information systems users; nonprogrammers get the visual tool kits; and Open/image Connect is a "screen-seraping" tool set for screen-level integration. Wang has at least 110 Open/image customers, the company said.

Other imaging vendors such as Recognition Equipment, Inc. offer hooks to PowerBuilder and Visual Basic through Dynamic Link Libraries.

# Kiosk ticketing takes off

By Mitch Betts

Frequent fliers who get stuck in line at the ticket counter from hell — the one where a chatty tourist with 14 bags is arranging the trip of a lifetime — will appreciate USAir Group, Inc.'s new ticket-dispensing kiosks at the Pittsburgh airport.

The average time it takes to get tickets and boarding passes from the self-service kiosks is one minute.

"I've been getting letters from customers who said they would have missed their flight otherwise," said Jack W. Cowan, USAir's senior director of coordination technology and infrastructure.

Based on the success of a pilot program, the Arlington, Va.-based, airline is gearing up to deploy the Fast Ticket kiosks in other airports. The business benefit is that the kiosks off-load routine transactions from customer service agents and give business customers faster service during peak hours, Cowan said.

Users insert their frequent flier cards for identification, select a destination on the map, answer questions about the timing of their trip and pay by credit card. Cowan said travelers can also use the touch-screen kiosks to get prepaid tickets and boarding passes.

USAir's Pacer reservation system provides flight information to the kiosks via an APPC/LU6.2 session. This guarantees that the kiosk users get the same accurate information as the USAir agents working behind the ticket counter, Cowan said.

For self-service terminals, the key to success is reliability that is as good or better than today's automated teller machines, said Harold Seligman, president of Management Alternatives, Inc., a travel consultancy in Stamford, Conn.

"When the machines function, they're very good," Seligman said. "But three or four years ago I saw a similar [airport] kiosk where a fellow was kicking the machine because it took his credit card but didn't produce a ticket." A counter agent had to rescue the machine and retrieve the user's card, he recalled.

The kiosks are part of a larger client/server system at the Pittsburgh hub that integrates all USAir airport functions.

On the client side, dumb terminals were replaced by a LAN of IBM PS/2 computers running OS/2. The mainframe server is an IBM ES/3090 at the data center in Winston-Salem, N.C.

OS/2's multitasking capability was crucial for giving agents multiple screens to monitor the various airport functions, Cowan said.

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Parallel Recovery Software	YES	NO	YES
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PC tattooing	X	X	X	
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Bi-directional parallel port	X	X	X	X
Desktop Management Interface (DMI) <sup>3</sup>	X	X		



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## Briefs

### Chip unit for sale

AT&T Global Information Solutions bowed out of the semiconductor business last week, citing the desire to free up management time and research and development funds. The company seeks to sell its NCR Microelectronic Products Division, which produced \$372 million in revenue in 1993.

### Kahn reelected

Borland International, Inc. Chief Executive Officer Philippe Kahn was reelected to a three-year term as a director of Borland's board. In total, Kahn gained the backing of 94% of the 20 million votes cast. Voting against him were two large institutional funds — the College Retirement Equities Fund and the California Public Employees Retirement Systems, which hold nearly 550,000 Borland shares between them.

### Ross hit with loss

Software developer Ross Systems, Inc. in Redwood City, Calif., announced revenue of \$22.4 million for the quarter ended June 30, compared with \$25.7 million for the same period last year. Earnings were also down to \$455,000, compared with \$3.3 million for the fourth quarter of 1993. The company said there was improvement in this quarter over the previous three quarters, and manufacturing systems software revenue increased as a result of a patent infringement settlement.

**SHORT TAKES** PowerOpen Association, Inc. in Cupertino, Calif., which defines IBM's PowerOpen Environment specification, has announced the selection of Gordon H. Kass as vice president of engineering.... Computer Sciences Corp. has agreed to acquire Ouroumoff Consultants, a French information technology management consulting firm, to provide a full range of information services in France.

## Scuttled deal deflates MCI, Nextel plans

Resumption of talks unlikely as others forge ahead with wireless agreements

By Ellis Booker

MCI Communications Corp.'s decision last week to back away from its planned \$1.3 billion investment in Nextel Communications, Inc. left holes in both companies' strategic plans. While most outside observers were hoping the two will work out their differences, MCI issued a firm statement that renewed talks had broken off.

While Nextel could seek alternate sources of funds to help it pursue its goal of a nationwide, wireless network in the 800- to 900-MHz spectrum, "I honestly think it's more likely that MCI will take some investment," said Iain Gillott, research manager of wireless communications at Link Resources Corp., a unit of International Data Corp. in Framingham, Mass.

Nextel needs MCI's brand name, expertise and money, Gillott said, while MCI badly needs a wireless partner — which until last week had been Nextel.

"If MCI wants to play in the wireless game, they can't let an opportunity to get ownership in a company that owns so much precious spectrum slip by," said John Pemberton, an analyst at Pemberton Group, a market research firm in Marshfield, Mass.

### Going with the flow

Pressure on MCI to resuscitate the deal stems from the growing number of other wireless deals — outright mergers and marketing alliances among cellular carriers.

Notably, rival AT&T Corp. is moving forward in its \$12.6 billion acquisition of McCaw Cellular Communications, Inc., having recently cleared regulatory inspection. And Sprint Corp. has made

clear its intention to be a serious contender in the Federal Communications Commission's broadband personal communications services (PCS) auction scheduled for the fourth quarter of this year.

Prior to its February agreement with Nextel, MCI had seemed hot on a PCS strategy. Now MCI will not say whether it will participate in the FCC auction. An MCI company spokesman noted that whatever the outcome of the auctions, PCS-based services "are not going to be a market tomorrow."

Meanwhile, Nextel's plan to convert its plethora of analog radio networks to digital is no small task. Nextel was months late rolling out service to Los Angeles, and industry analysts said there have been reports of service quality problems.

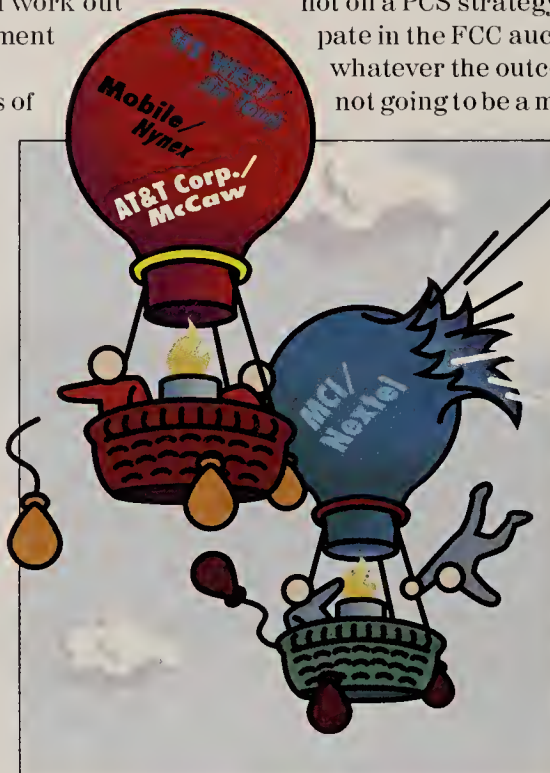
### Alliance friction

Earlier this month, Nextel — capping its buying binge of specialized mobile radio licenses — paid \$2.4 billion in stock to purchase Motorola, Inc.'s radio dispatch properties and Dial Page, Inc.

But that deal, while doubling Nextel's customer base to 650,000, also caused friction between MCI and Motorola over price, technology and management. MCI's original 17% stake in Nextel was then diluted, sources familiar with the talks said.

"MCI is reacting and running scared," said Ira Brodsky, president of Datacomm Research Co. in Wilmette, Ill. "They know they now want an alliance but aren't sure what it should be."

In its statement last week, MCI said renewed talks collapsed when it could not come to terms with Motorola, even though discussions had been going smoothly with Nextel.



DAVE MARSHALL

## Traveling Software gets going in Windows market

By Michael Fitzgerald  
BOTHELL, WASH.

Traveling Software, Inc. is staking its future on LapLink for Windows, a product two years in the making and a completely rewritten version of the vendor's venerable file-transfer utility. But to survive, the company must establish a beachhead in a market dominated by Symantec Corp.

Despite the formidable challenge facing the relatively tiny \$21 million company, Traveling Software takes a lighthearted approach to the coming battle. For example, guest badges at the company's headquarters have a space for visitors to draw a picture of themselves and name their favorite hobby, and the computers that demonstrate LapLink for Windows are named after The Three Stooges.

However, Mark Eppley, Traveling Software's flamboyant founder, chairman and chief executive officer, has had to make some grim moves lately. He laid off 10% of the company's employees to prepare for LapLink's release, maintaining that the company needs to devote more of its resources to advertising and the like.

"This is a bet-the-company strategy," Eppley said

### Need for speed

The corporate conference room lies at the end of a long hallway, and occasionally an overzealous employee skateboards into one of the walls, startling unsuspecting visitors. The skateboards are "[Chairman] Mark [Eppley]'s invention," explains Marci Maule, the company's marketing communications manager. "It saves 30 seconds going from one end to the other, and that adds up over the course of a year."

about LapLink for Windows, which hits the market this week. LapLink already has an installed base of more than 2 million users, and Traveling Software is looking toward a market with bigger potential: remote-control/remote-access software. Analysts said the new segment is expected to grow from \$100 million to \$300 million in 1997.

"The market is Windows, so they either make this transition or go into... living death," said Jeffrey Henning, an analyst at BIS Strategic Decisions in Norwell, Mass. Henning said Traveling Software appears to have done what it takes to make LapLink a success: revamping it rather than just porting the DOS version to Windows.

But if Traveling Software wants to thrive, it must do the following:

- Successfully shift its main product from DOS to Windows, a task formidable enough to strain the resources of much larger companies such as Lotus Development Corp. and WordPerfect.
- Establish itself in a market for remote control and remote access, which is dominated by Symantec's PC Anywhere.
- Increase customer support if the product is a success.

It also helps that the competition may not be as tough as it appears.

"PC Anywhere is a pretty sorry excuse for computing [remotely]," said Kimball Brown, an analyst at Dataquest, Inc. in San Jose, Calif., citing its slow, nonintuitive interface.



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## Editorial

## Legacy log-off

*Computerworld* bid good-bye to its legacy system last week.

It probably wasn't much by your standards — four wheezing minicomputers and a couple of big old disk drives that collectively held less data than the PC under my desk — but it produced more than 80,000 pages of this newspaper over 11 years.

Replacing it are two IBM RS/6000s connected to more than 70 PCs. Our migration to client/server has been torturous. I suspect it's a microcosm of what our readers are going through these days. The legacy systems were unplugged 18 months behind schedule and at the cost of many hundreds of hours of lost administrative time. If we did one thing wrong in moving to client/server, it was probably in doing it too early.

The system demonstrated to us in 1991 by our OEM, Atex Publishing Systems, looked great. The system we got was another story. Beseet by serious bugs from the beginning, the package was initially rejected by most of our users because of its instability. User workstations were crashing up to 10 times a day, our internal support staff was swamped, and the matter quickly escalated into a bitter confrontation between user and vendor.

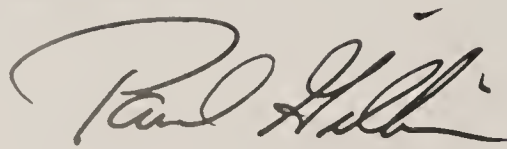
To be fair, the troubles weren't all Atex's fault. At our request, the vendor tried to shoehorn a reasonably stable MS-DOS-based system into the unstable Microsoft Windows 3.0. Drunk with the possibilities, we began to squeeze more and more functionality into a limited Windows space until the system collapsed under its own weight. We also seriously neglected training, leaving our overburdened help desk as the first line of defense for all problems, big and small.

We learned firsthand what most client/server veterans already know: that a client/server transition is neither cheap nor easy. We didn't save money on the new system, and in many ways it's no better than what it replaced. Our legacy system, for example, could find any file in less than a second. The new one takes minutes and may return 10 files with the same name scattered across more than 200 subdirectories.

Support costs are higher because we now have more than 70 different computers instead of four. And complexity has increased: There are at least three different E-mail systems, groupware, an Internet server, external gateways and dozens of Windows programs installed on local hard drives.

But would we go back to the legacy system? I don't think so. Our networked environment has given us vastly greater flexibility and improved access to the outside world. Writers are beginning to report stories from CompuServe and the Internet. Our entire company is being linked on Lotus' Notes. And when I polled our cynical, battle-scarred staff last week to see if they'd go back to the old system, the answer was a resounding "No!"

So good-bye, legacy system. We're grateful for what you did, but we won't miss you.



Paul Gillin, Editor  
Internet: pgillin@cw.com



Senior system engineer Alan Nelson, left, and facilities coordinator Gregg Pinsky move out the Ater hardware

## Letters to the editor

## Pacific Bell choice seems capricious

I wonder how Pacific Bell can make a decision to adopt an operating system before it is even released ["Pac Bell picks Microsoft," CW, July 25]. As a customer of Pacific Bell, I certainly hope the article is wildly wrong, but I am not so sure. The decision is apparently based on "only brief looks at the first full beta version of Chicago."

Pacific Bell's criticism of OS/2 a year ago as not being "mature enough at the time" and decision to adopt something that was arguably just as immature at the time — and now choosing something else still in beta — is laughable. However, most amazing is that nowhere in the article do we read of any concern for stability.

Replacing OS/2 with Chicago on resource-starved hardware is unlikely to achieve much. Equally, adopting NT/Chicago with their built-in LAN would no more reduce the number of LAN managers than would adopting any single LAN as a standard.

Nicholas R. Avery  
Principal,  
A2 Industries  
La Jolla, Calif.

## Complexity is part of Pathworks

It is yesterday's news that Digital implemented Pathworks to connect PCs with data stored on the OpenVMS operating system ["Pathworks loses steam," CW, July 25].

It is to Digital's credit that the

company has severed the old linkages between Pathworks, DECnet and OpenVMS. It recognized the need for application compatibility, and Pathworks 5.0 includes the unmodified versions of LAN Manager and NetWare client software. Pathworks permits a variety of desktop systems to communicate with a variety of servers using NetWare, LAN Manager, TCP/IP and DECnet/OSI at the same time, in any combination.

Pathworks 5.0 remains a complex product because it has attempted to go where none has gone before. It was late and has had some shakedown problems, but it has substantial upside potential.

Douglas E. Foster  
President,

Douglas Foster Consulting  
Virginia Beach, Va.

I was tremendously disappointed in "Pathworks loses steam." Any product with as many significant changes as those in Pathworks 5.0 requires that a company consider upgrading to the new version carefully.

Our experience with Pathworks customers is that after a thorough investigation of the capabilities of Pathworks 5.0, especially the integration benefits for multiple network operating systems embedded in this release, full-scale migrations get under way. The fact that this migration planning has taken so long is more of a testament to the size and complexity of Pathworks networks than any lack of confidence in the product or Digital's commitment to it.

Michael Hays  
President,  
ITAC, Inc.  
Deering, N.H.

## Market share gift

To the vendors complaining about Microsoft's market share: Wake up and smell the pizza.

You do not receive my business because my customers can't afford or are not willing to buy your company in order to use your operating system, programming tools, etc.

The cost of your operating system, programming tools and runtime licensing exceed the budgets of many of my customers for an entire software project.

Drop your prices and eliminate runtime licensing fees so the average small business can afford to use your products. Then we can talk.

Face the facts: Microsoft did not *gain* your so-called market share; the rest of you gave it to them.

John H. Fortner  
Claremore, Okla.



■ Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include a phone number for verification.



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# Transcending functional boundaries

Shailendra Jain

**Y**ou read it here: Re-engineering is getting slammed, according to Julia King's front page story [CW, June 13]. With the going failure rate of business process re-engineering (BPR) initiatives running well over 50%, re-engineering itself is in desperate need of retooling.

As a systems integrator, I've seen every sort of BPR activity, and I'm convinced there is a valuable tool CIOs are ignoring. Ironically, the tool is a common result rather than a cause of re-engineering efforts, and it's in the CIO's backyard. It's data warehousing.

One of the CIO's unique contributions is a cross-functional view of the organization. Transcending organizational boundaries is a fundamental characteristic of BPR, and data warehousing can give you the borderless data you need to make some sense of it.

There has been a renaissance of data warehouses in the client/server world — usually as an outgrowth of BPR — to provide better decision-support capabilities. Surprisingly, no one seems to think of providing decision support for BPR.

IS departments have been using their tried-and-true hammer — CASE — to whack away at the BPR problem. Creating data flow diagrams of business processes is a systems, not business, analysis method and provides an all too narrow perspective.

BPR demands creativity and an intimate understanding of a company's operations. Yet the management consultants that CIOs have brought in for their valuable outside perspective can't easily conclude, without internal data, how their knowledge best applies to the client company's experience: a unique, hard-to-quantify mix of processes, products, markets and relationships.

You probably will build a data warehouse eventually, right? You might as well make that cross-functional knowledge repository available to the BPR team at the outset. You'll get the data you need for BPR quicker, and it will probably be more accurate.

What you need is available today: warehouse management tools to copy, clean up and stage production data on powerful servers and the slice-and-dice end-user query tools needed to turn that data into useful information.

Another benefit is realistic benchmarking. The success of any project depends on how well expectations are set. A warehouse will give you the quantitative metrics you need to establish business process baselines and

measure progress.

Your company's history also says something about what is realistically achievable. Off-the-shelf trend analysis tools can help determine the feasibility of various approaches.

Finally, you can use warehousing tools to perform value workflow or multiattributed utility analyses on your workflow and asso-

ciate quantitative rather than qualitative values to its components. Questions you might ask include: "How long does it take today to do X?" and "How does Z policy affect delivery schedules?"

Corporate America faces the prospect of \$20 billion worth of

BPR efforts going down the tubes this year. So instead of debating who should be responsible or blamed for re-engineering, start by putting your best foot forward. The CIO, BPR and data warehousing all transcend the functional boundaries of your organization, and that's your strength. Play to it.

Jain is chief technology officer at Trecom Business Systems in Edison, N.J., and can be reached on the Internet at [sjain@trecom.com](mailto:sjain@trecom.com).

*Data warehousing can give you the borderless data you need to make some sense of business process re-engineering.*



# The importance of a reuse strategy

Patricia Seybold

**I**f you're embarking on an object-oriented development project, beware! You may be predicating your return on investment on a set of bogus assumptions. Everyone wants reuse; it's one of the promised benefits of object-oriented development — along with reduced maintenance costs and faster time to market. But reuse in object-oriented development, as in any other mode of application development, can prove to be an elusive goal.

To make reuse pay off, you have to design it into your strategy up front. On average, successful practitioners of object-oriented development are achieving 60% to 70% reuse. That means they are writing 30% to 40% new code for each new application and reusing the rest. However, you will not get reuse without the following:

- A business object model.
- An object repository.
- A configuration management and integrated project support.
- An object technology architecture.

• Oh, and you won't really get reuse until you've got three or four projects in the same business domain under your belt.

Charles Troxel, director of Enterprise Strategic Architecture at GTE's Telephone Operations in Irving, Texas, has transitioned 2,500 members of his 4,000-person development staff to object-oriented development using a homegrown "workflow" method. In this method, high-level business processes, objects and rules are captured and refined with rapid prototyping.

Troxel says the key to getting operations started is not to "lose control of your objects." His team maintains business rules in homegrown inference engines. Second, don't let class libraries proliferate, and don't let developers create new object behaviors.

Troxel's group has identified a core set of 100 business objects. Everything else is derived from those objects. The object and process repository is maintained by a team of requirements engineers who oversee each project to ensure consistency with the pre-

approved processes and objects.

Jim Stikeleather, former IS director at Kash n' Karry Food Stores and now a partner at The Technical Resources Connection in Tampa, Fla., emphasizes the key role of integrated project support. He recommends a CASE tool with a repository for reusable object classes, a suite of testing tools, configuration management and a complete development environment for the projects in which he is involved.

"You can't count on humans to do reuse. You have to automate the reuse function," Stikeleather says.

Jason Matthews, president of Genesis Development Corp., emphasizes the importance of the underlying technical architecture. He says the real bang for the buck comes from reusing object services. He suggests that your technical architecture team work parallel to your object information architecture team to abstract out the object services that can be reused over and over again across applications.

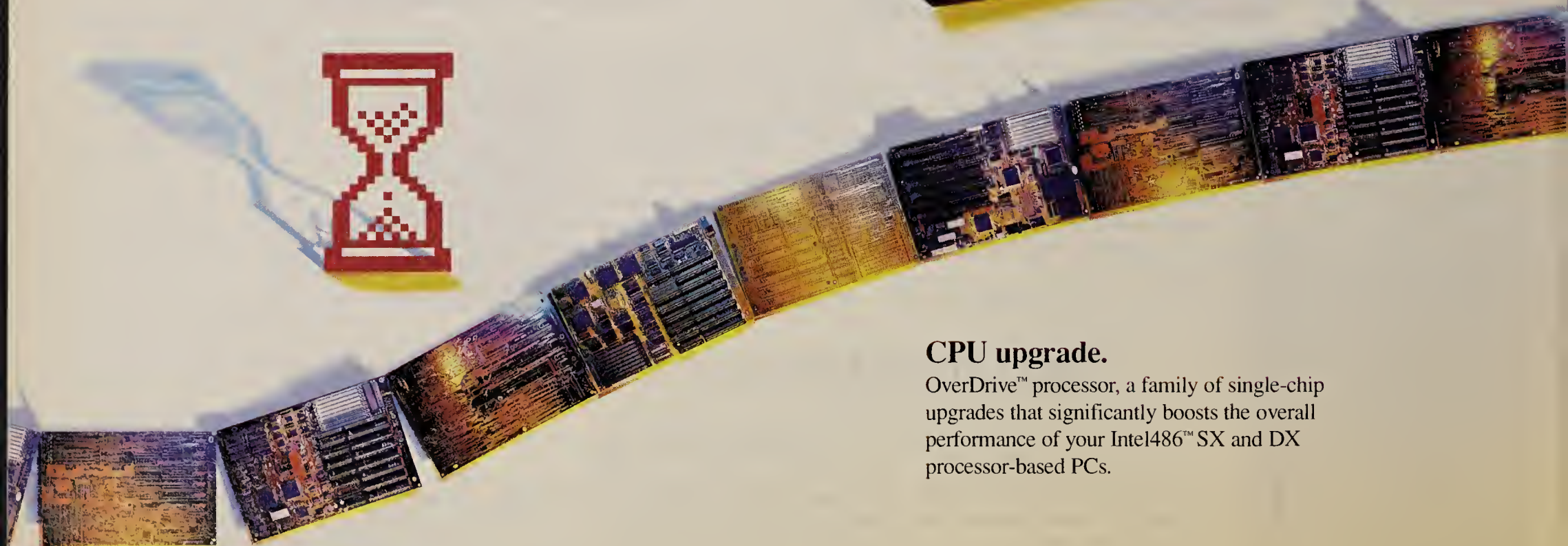
If you're serious about attaining the 60% levels of reuse, you're going to need a proactive reuse strategy that combines all of these suggestions and more. So it's an investment well worth making.

Seybold is president of Patricia Seybold Group in Boston. Her Notes address is [Patricia.Seybold@PSOG](mailto:Patricia.Seybold@PSOG). Her Internet address is [PSeybold@PSGroup.com](mailto:PSeybold@PSGroup.com).

*Reuse in object-oriented development, as in any other mode of application development, can prove to be an elusive goal.*







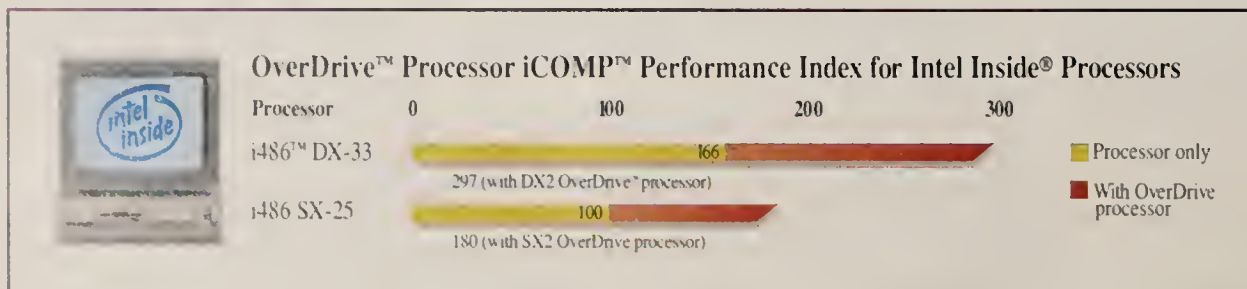
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## Compaq keyboard labels spawn few imitators

By Mitch Betts and Jaikumar Vijayan

Compaq Computer Corp.'s recent decision to put warning labels on its keyboards was a shrewd move that may help it avert more lawsuits from users who blame keyboards for arm and wrist ailments, observers said.

"It has the potential to insulate the manufacturer from liability," mostly by fending off the frequent charge that the vendor failed to warn users about possible injuries, said Lawrence F. Carnevale, a partner at Carter, Ledyard & Milburn, a New York law firm that specializes in product liability.

"Compaq has set the standard... and put a little pressure on their brethren to do the same," the attorney said.

However, Carnevale added, "whether the warning label will be a 100% insulator depends on whether a jury sees it as an adequate warning." Unlike the explicit warnings on cigarette packs, for example, the Compaq label merely directs users to look at the manual's section on ergonomics.

### No proof

In essence, Compaq took a middle-of-the-road approach with its label, Carnevale explained. Compaq did not say the keyboard causes injuries because there is no scientific proof of that, but "there is enough hoopla about the risks that it had to do something," he said.

So far, though, there is little indication that other vendors will follow Compaq's lead. When contacted, some of the leading desktop vendors said they had no plans to put similar stickers on their keyboards or that they

### Worth repeating

"Don't just warn me. Make it safe," said Ellen Bravo, executive director at 9105, the National Association of Working Women in Milwaukee. Studies on long-term keyboard use, done by the association during the last 20 years, have revealed that carpal tunnel syndrome is the most common repetitive strain injury sustained by clerical workers, Bravo said.

were looking into the legalities of the issue.

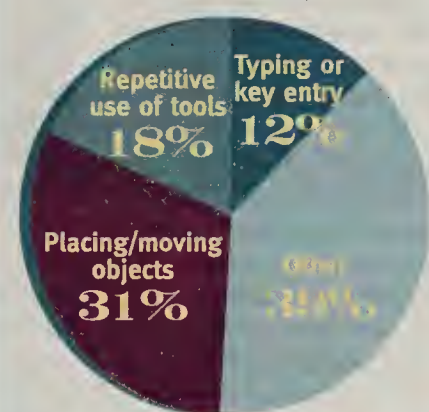
The IBM PC Co., for instance, does not intend to announce anything similar right now, according to a spokesman. Since 1989, IBM has been alerting users to the risks involved in the prolonged use of computers. Tips on proper ergonomics, office furniture and precautions to be taken are contained in an information booklet and are also available on-line.

Similarly, Dell Computer Corp. has no immediate

### Workplace pains

Keyboard work accounts for 12% of repetitive motion injuries...

TOTAL NUMBER OF REPETITIVE MOTION CASES IN 1992: 89,900



Source: U.S. Bureau of Labor Statistics, Washington

... and carpal tunnel syndrome requires the longest recuperation period among work-related injuries

DISABLING CONDITION	WORK TIME LOST (AVERAGE)
Carpal tunnel syndrome	32 days
Amputations	21 days
Fractures	19 days

## Identity crisis hurts PDA market

By Michael Fitzgerald

■ So far, the personal digital assistant (PDA) market has been a lot like the old children's toy, the Weeble: It wobbles, but analysts don't think it will fall down.

But in light of Compaq Computer Corp.'s recent decision to scale back its Mobile Companion effort, some think the market's woes will continue to get worse. The Mobile Companion, initially a joint effort among Compaq, Microsoft Corp. and Intel Corp., with some help from VLSI Technologies, Inc., has already been delayed twice. It also took a hit when Intel and VLSI went their separate ways on chip set development.

Currently, Compaq has no set delivery time frame for the product. Observers said it will be difficult for Compaq to deliver a handheld before 1996.

### Ripple effect

"This is a pretty serious blow" for Microsoft's WinPad, which was to be the operating system for Mobile Companion, said Jeffrey Henning, an analyst at BIS Strategic Decisions in Norwell, Mass. Henning said Compaq's withdrawal likely signals that other vendors will be slow to

adopt WinPad, also known as At Work for Handhelds.

"Compaq is the leader in the PC industry and in portables and would be the best choice to come out with the product to spearhead the industry," Henning

New crop of Newtons		
IN FALL, APPLE IS EXPECTED TO BRING OUT AN ENHANCED NEWTON, AND MOTOROLA WILL DELIVER ITS FIRST PDA BASED ON THE NEWTON OPERATING SYSTEM		
	Apple Computer, Inc.	Motorola, Inc.
Code name:	Gelato	Gecko
Processor:	low-power ARM 610	ARM
Weight:	1.28 pounds	less than 1 pound
Price:	\$599	\$950 to \$995

said. "So why should other people decide to do it if Compaq's not going to do it? If they're not going to do it, something must be up."

Microsoft officials declined to comment. A spokeswoman said Microsoft had nothing new to say about the operating system, which was last discussed publicly in March.

While Compaq's decision to pull back on Mobile Companion is a blow to Microsoft and possibly the PDA market, it may

make good business sense because users say they do not know exactly what a PDA will do for them.

"I think they're cool, but I don't see them ever being more than toys," said Tom Balzarini, PC coordinator at Associated Grocers, Inc. in Seattle. Balzarini said throughput issues with handhelds, among other things, make it difficult to envision tying complex corporate applications onto products such as Apple Computer, Inc.'s Newton.

### Early diagnosis

Analysts said the market has developed some warning signs.

"A lot of [vendors] have gotten skittish because of what happened to Apple and everybody else in the handheld market," said Bruce Stephen, an analyst at International Data Corp. in Framingham, Mass. "Unless you're willing to fund some learning, it's not a particularly rosy business proposition."

Perhaps to calm this anxiety, some new PDAs will come to market this fall. For instance, Apple plans an update to the MessagePad 110. Code-named Gelato, it will use a new version of the ARM 610 processor and sport an improved display. Its op-

erating system will be upgradable in ROM.

The market for Newtons might even get a little boost when Motorola, Inc. introduces its own PDA running the Newton's operating system. Code-named Gecko, it apparently resembles a Hewlett-Packard Co. 200LX that has been opened up, sources said. An LCD screen with a built-in digitizer occupies one side of the package and an ARDIS modem and antenna occupy the other, according to sources briefed on the product. The sources said Gecko will appear late in the fourth quarter and will cost \$950 to \$995, with a PCMCIA slot. It also weighs less than 1 pound.

On another front, Sony Corp. is expected this fall to introduce the first PDA to use General Magic, Inc.'s Magic Cap operating system, sources said.

Henning said the Newton appears to be on track to survive, if not thrive, in the marketplace. He speculated that WinPad would not end up doing well in the market. Geoworks' Geos could also survive because of its ability to run in low-memory environments, he said.

Henning even suggested that Microsoft, which is reportedly having problems making WinPad small enough to run on a PDA, should buy Geoworks.

"They bought DOS; why not buy Geos if they want to play in the low end?" Henning asked.



# Re-engineering begins at Home

Home Insurance transforms claims processing with integrated, single-system view of information

By Thomas Hoffman

As any insurance agent will tell you, processing customer claims can be a paper-based headache.

Preparing an accident claim for a simple fender bender, for example, often requires agents to fill out stacks of forms, which are duplicated and distributed to all parties involved.

While many leading-edge insurance companies such as United Services Automobile Association in San Antonio have successfully tamed the paper tiger by replacing their file cabinets with efficient image-processing systems, The Home Insurance Co. has taken a decidedly different approach.

The New York-based insurer recently integrated five disparate databases that house historical data on customer policies and claims and created a graphical, single-system view from which claims representatives can draw information.

Furthermore, after consolidating several field offices in recent months, Home Insurance is equipping its mobile loss-control professionals with notebook computers in an effort to bring them even

closer to their customers.

Re-engineering claims processes has become a hot button for many insurers.

"Claims processing is an obvious choice because these operations typically take up half the staff for a property casualty company," said Catherine M. Weston, a partner at Ernst & Young, an insurance consultancy in Boston. "Besides, re-engineering helps improve customer satisfaction by getting claims out the door faster."

## Touch of a button

"Instead of having to hunt through paperwork to process a claim, we can do it all now with the push of a button. It's just wonderful," said Richard Breitweiser, a senior claims counsel at Home Insurance. He began using a claims workstation in March.

In the past, Home Insurance agents were forced to search through five separate IBM IMS- and DB2-based claims da-

tabases for data on prior claims, clients' backgrounds and other vital statistics. Most recently, the insurer began installing 700 Unisys Corp. PW2 Advantage Plus workstations. The workstations,

which front end all of the disparate databases through an interface built with Easel Corp. development tools, pipe the information directly to the insurance agents.

Set up at more than 20 Home Insurance offices, the workstations will be installed in the few remaining offices by the end of this month, said Joseph J. Campbell, senior vice president of information systems and business processes at the property casualty insurer.

Unlike other insurers that became quick converts to

stand-alone image-processing systems in recent years, Home Insurance is still evaluating enterprisewide imaging systems for applications other than claims processing. But before the company makes a sizable investment, Campbell said, "We have to find something that integrates solutions for customers across the spectrum." He said Home Insurance expects to choose an enterprisewide imaging platform by the end of the year.

Another area in which Home Insur-

ance is trying to improve customer service is its loss-control division, which helps customers control their risks and prevent potential losses in areas such as capital investments.

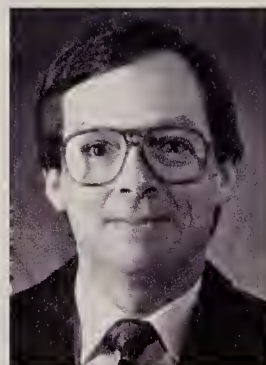
## Efficient moves

After undergoing a corporate restructuring earlier this year, the company decided to improve the efficiency of its field offices while keeping its loss-control professionals close to their customers.

Home Insurance also closed its offices in Seattle, Birmingham, Ala., and four other cities earlier this year and equipped 150 of its representatives with Toshiba Corp. laptop computers in May. The laptops were configured with shrink-wrapped packages such as WordPerfect Corp.'s 6.0A word processing, Lotus Development Corp.'s 1-2-3 Release 4.1 and Software Publishing Corp.'s Harvard Graphics 2.0.

So far, the mobile computing concept has worked well for Home Insurance. The systems have helped the insurer reduce the loss-control portion of its underwriting process from several weeks to just a few days.

"It has freed our reliance from clerical support and improved communications — both internally and externally — between staff and customers," said Home Insurance corporate secretary Harvey Berns.



Joseph J. Campbell says Home Insurance is evaluating enterprisewide imaging systems

"Gotta love notebook computers. I'm halfway through my spreadsheet, 25,000 feet up, I'm on a roll, and my battery wimps out on me."



## Typical VeriTest Steeplechase Results:

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NEW RECORDS:		hrs:mins
Dell® Latitude™ XP DX2/50 STN		17:05
Dell Latitude XP DX4/100 TFT		14:48
OLD RECORD FOR 486 MONO:		12:07
IBM ThinkPad 350C (SL/25) passive		8:50
IBM ThinkPad 500 (486/slc) mono		6:30
Toshiba T4800ct (DX4/75) TFT		5:30

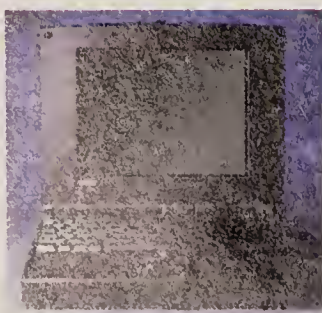
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# Trane revamps slow systems

By Thomas Hoffman

Like many large manufacturers in America's Rust Belt, The Trane Co. has been pushing hard in recent years to re-engineer its staid business processes and reduce costs.

The \$2.5 billion commercial air conditioner maker and its parent company, American Standard Co., have reduced their operating expenses by more than \$300 million since 1991. It did this in part by using demand/flow technologies to reduce the amount of time it takes to build products.

More recently, Trane has focused on its North American Commercial Group, an \$800 million unit responsible for Trane's 200 parts distributors across the U.S.

After visiting 80 customers and distributors at 30 of its field offices, Trane concluded that its stand-alone, microfiche-based parts-identification systems were too slow. Clients could just as easily order generic replacement parts from Trane competitors such as Carrier Corp. or W. W. Grainger, Inc. in Skokie, Ill.

Information at Trane's distributors "was often difficult to access, duplicated in many areas, and there were too many islands of automation. What we needed was an integrated system," said Bruce Anderson, a business transformation

'producer' at Trane.

Also, whenever a distributor needed a new computer system, the company would assign a disproportionately high number of staffers to develop it. That practice, Trane decided after months of evaluations, was too labor-intensive. "Our core competency is air conditioners, not computers," Anderson added.

## Help on its way

So Trane enlisted the aid of AT&T Global Information Solutions to help identify its parts-ordering systems requirements. Trane discovered a CD-ROM-based parts-inventory package from Dega Technology, Inc. in San Luis Obispo, Calif. The package can hold up to 40 years of parts information on a single disk.

Trane's parts-identification system, called Competitive Advantage Through Speed (CATS), has been rolled out to more than 200 distributors since its introduction in April. CATS runs on AT&T 3230 PCs.

Using the microfiche systems, which were incapable of conducting file searches, Trane distributors spent anywhere from 10 minutes to a week locating a single part. Now, with the client/server-based CD-ROM package and its search capabilities, distributors can identify a part when they type in the information.



# Suites, Windows sales don't dominate application use

By William Brandel

■ **The conventional wisdom in today's market is that almost all users use Windows applications on the desktop and more are using software suites. Yet a recent survey of corporate users shows otherwise.**

According to a survey of 10,500 U.S. users by Computer Intelligence/InfoCorp in La Jolla, Calif., six of the 10 most used applications at corporate sites are based on DOS. In fact, the Top 2 most widely used applications with 1,000 or more end users — WordPerfect for DOS and Lotus Development Corp.'s 1-2-3 for DOS — are neither Windows-based nor found in a suite.

"Because of all the publicity that Windows gets, you'd think that the DOS world doesn't exist," said Greg Falzon, a PC software analyst at CI/InfoCorp. "But DOS is still dominant."

## Ahead by a nose

According to the market researcher, WordPerfect for DOS still has a user population of 4.1 million, slightly more than its 4 million user base for WordPerfect for

Windows. Lotus' 1-2-3, which comes in second with 3.3 million DOS users, greatly exceeds its 2.6 million 1-2-3 for Windows user base.

The other DOS-based applications in the Top 10 are Borland International, Inc.'s dBase for DOS, Symantec Corp.'s Norton Utilities for DOS, Software Publishing Corp.'s Harvard Graphics for DOS and Microsoft's Word for DOS.

Windows applications rounding out the Top 10 are Microsoft's Word and Excel, WordPerfect for Windows and Lotus' 1-2-3 for Windows.

These figures are backed up by a survey conducted earlier this year by International Data Corp. (IDC) in Framingham, Mass. IDC notes that 57% of desktops today run

## Craving more than suites

Most widely used windows applications at corporate sites

PROGRAMS	NUMBER OF USERS
Microsoft Word	5.1M
WordPerfect	4M
Microsoft Excel	3.9M
Lotus 1-2-3	2.6M
Microsoft Works	2.1M

Source: Computer Intelligence/InfoCorp, La Jolla, Calif.

## It works

Despite the popularity of Microsoft's Office application suite, its Works bundle remains one of the most widely used Windows application sets at user sites.

DOS-based applications, compared with 40.2% running Windows-based programs.

Such survey numbers are revealing because they fly smack in the face of the industry hype over which applications corporate sites most widely use. Hitherto, analysts said, assessments of operating system use

were viewed with skepticism because operating systems are often bundled with hardware. Windows usage was often determined by the number of Windows applications shipped and then divided by the average number of applications a user would load on his or her desktop.

Now, the same kind of thinking — that units shipped do not translate into actual usage — is being applied to applications and suites. Just because extra applica-

tions ship with a popular word processor or spreadsheet does not mean end users want those extras or even use them.

"Our end users are definitely not using all the applications in the suites," said an information systems manager at a New York-based publishing firm that uses Microsoft's Office. "Most of them are not even using more than one."

## Tomorrow is another day

But usage trends today do not determine how applications will be used in the future. Nearly 60% of users surveyed earlier this year by IDG Research Services Group said they were likely to buy a suite this year.

Suites have benefited from the low-cost bundling of popular packages. For example, driven by bundled sales of Word for Windows and Excel, Microsoft has established Office as a near de facto suite standard, with many market research surveys saying it dominates 80% of the market.

Lotus' SmartSuite, now shipping in Version 3.0, and Borland's Borland Office suite make up the remainder of the suite market. The Borland suite will be refreshed later this fall in the form of PerfectOffice, which is now being developed by WordPerfect.

## Briefs

### Modems for all

U.S. Robotics, Inc. announced V.34 modems have been added across its product line. The first products will appear this month.

### AST adds notebook

AST Research, Inc. introduced its Ascentia 800N, a midrange notebook with a 25/50-MHz Intel Corp. i486DX2 chip and passive-matrix color screen. It costs \$2,349. It also has Western Digital, Inc.'s RoocketChip graphics accelerator and local-bus graphics and weighs 5.9 pounds.

### TI notebooks go multimedia

Texas Instruments, Inc. announced two notebooks based on the 25/50-MHz i486SX2 from Intel. The 4000M/50 notebooks have dual-scan passive-matrix color screens or active-matrix color screens. They include multimedia features such as Intel's Indeo video software. The notebooks are aggressively priced at \$2,999 for a passive-matrix color version with a 200M-byte hard drive or \$3,599 for an active-matrix color version with a 340M-byte hard drive. TI also cut prices on the 25-MHz 486SX-based versions of the 4000M by \$250 to \$400.

### Faxing wizard

Sharp Corp. introduced the OZ-9520FX Wizard Pocket Communicator, which builds on the basic Wizard platform by adding fax/modem capa-

bilities. It also adopts a QWERTY keyboard and has a new touch screen. The new Wizard costs \$749.99, the fax/modem costs \$179.99.

### Packaged notebook

Canon Computer Systems, Inc. released two notebooks based on the Intel i486DX2. The Innova Book 150C and 150CT use the 25/50-MHz i486DX2 or the 33/66-MHz i486DX2. The notebooks include audio capabilities and 32-bit local-bus graphics, Claris Corp.'s Works software package, Borland International, Inc.'s SideKick for Windows and the "Official Airline Guide." Prices range from \$2,399 to \$3,599, depending on configuration and whether the screen is active-matrix or passive-matrix color.

### New kind of Brick

Ergo Computing, Inc., the Peabody, Mass., maker of the Brick, introduced a high-powered, low-cost notebook. The PowerBrick 100 is based on Intel's scarce 33/100-MHz i486DX4. It has a dual-scan passive-matrix color screen and a 340M-byte hard drive. It costs \$3,295. A base model monochrome version sells for \$2,295. Features include Verbex speech recognition, CD-quality sound and a free cellular phone in certain markets.

### Trial run for CDPD

Cellular Digital Packet Data (CDPD) is up and on trial in Indianapolis. Bell-South Cellular Corp. said the trial will last six to nine months. The utility Indiana Gas will field test a mobile dispatch system by year's end.



"Oh boy, I got a notebook. But it's not powerful enough to do the jobs I used to do on my desktop. Fat lot of good that does me..."



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# Developers must prove compatibility with Chicago, Daytona

Logo requirement could delay applications

By Stuart J. Johnston and Ed Scannell  
REDMOND, WASH.

Microsoft Corp. has decided that if software developers want to use the Windows logo on their boxes they will have to follow some new rules, including testing to make sure Chicago applications run under Daytona.

Previously, Microsoft required developers to test under one environment or the other.

However, some users raised doubts about the need for such certification. And some developers said they will do without the Windows logo rather than have additional testing hold up shipment of their products for Chicago, the next version of Windows, and Daytona, the next release of Windows NT.

Microsoft managers maintained that large customers want the compatibility this program will help bring.

"The feedback from corporations is that it is important for them to deploy a mixed desktop environment based on Chicago and NT. They want the same application to be able to run on both," said

Brad Struss, Microsoft's manager of developer relations for Win32, the 32-bit application programming interface that Daytona and Chicago support.

Users interviewed said such a logo means little to them. "Most users don't care," said Bill Cornfield, president of The Windows Support Group, a New York-based consultancy whose clients include the National Football League, the Federal Reserve and Anheuser-Busch, Inc. "They're trying to force developers into the Win32 world, and I'm not sure that's smart."



## One or the other

In fact, some said that in reality, users will choose only one environment for their desktop PCs, while their

servers may run something different. In either event, according to these observers, it is not necessary to have the same applications on the desktop and server.

The bigger issue is that Daytona and Chicago sport radically different user interfaces. "We've told Microsoft there will be a problem" because of this, said Brian Moura, assistant city manager for San Carlos, Calif. For that reason, Moura said

he has decided that the city will not use both systems. "We're looking at Daytona as an applications server, but as far as the desktop, we want the same look and feel for everybody."

Additionally, Moura and several other users said they always test programs before they make deployment decisions, so a logo as a seal of assurance means little to them.

According to Microsoft officials, technical help will be available to developers and users regarding the dual-

user interface issue.

One aspect of the logo program that has nothing to do with supporting dual platforms garnered rave reviews from another user group: Each application will have a de-install capability so users can easily remove unwanted programs.

"That's probably the best thing I've seen about the requirements," said Joel Diamond, executive director

of the Windows User Group Network in Media, Pa.

**Some observers said it is not necessary to have the same applications on the desktop and server.**

## New Zealand users voice concerns about Chicago

By Doug Casement  
AUCKLAND, NEW ZEALAND

■ **Microsoft Corp. New Zealand is hearing some mixed reactions from users as it revs up its Chicago (Windows 4.0) marketing machine. Of particular concern are issues such as license management, upgrade costs and support needs.**

John Shaw, information technology manager at Hamilton-based manufacturer Gallagher Group, which runs 65 Windows PCs, said the company intends to switch to Chicago fairly quickly because it offers several advantages — including better connectivity to its AS/400.

"Chicago gets rid of the DOS 640K-byte memory limitation, which can be a problem on the network. Although it's not a true multitasking operating system, very few people need genuine multitasking. What they need is what Windows offers now — task switching," Shaw said.

### U.S. influence

Although Microsoft has been making much of Chicago and the advantages it will offer, Shaw said he has concerns about Microsoft's licensing and support policy, which he said is influenced too much by what Microsoft does in the U.S.

"I don't believe that Microsoft is doing a good job looking after its big customers. We are quite a large site — by New Zealand standards — and the price we pay for site licenses is no better than what the average person on the street gets," Shaw added. "With Microsoft, you have to have 500 or more users before you get any decent discounts."

Yet for users such as Martin Pearman, information technology manager at insurance company AMP's head office in Wellington, the migration to Chicago is "not a question of if but when."

Pearman said he is certain his compa-

ny will migrate its 500 Windows PCs to Chicago when it ships. "We have been made aware of what's in Chicago and are definitely interested; we will jump across when we are ready," he explained.

### At what cost

The cost of upgrading, however, weighs heavy on the minds of some users.

"The biggest problem we have is upgrading hardware to match software requirements," said Paul Jepson, information technology manager at consulting engineering firm Beca Carter Hollings and Ferner. "We don't achieve the productivity gains we would like because we are spending all our money upgrading."

"In our business you get a lot of information electronically," he added. "If a client is using Excel 5.0, then although you might be happy with Version 4.0, you have to upgrade anyway."

Also unsure about migration plans is Neil Cook, information systems manager at Auckland-based Union Shipping, which has about 60 Windows PCs. Cook said Union has no plans to switch to Chicago,

"but there is the possibility that we could in the future."

On the technical front, Carole Patton, chief analyst at Mendham Technology Group in Mendham, N.J., said that while Windows is overdue for a major upgrade, Chicago isn't it. "Incredibly, this long-anticipated software has more in common with IBM's OS/2 than it does with Windows," Patton said.

Microsoft's "problem" with Windows has always been how to get rid of DOS, which Windows runs on top of, Patton noted. "There is still a huge installed base of DOS users. And, more important, DOS is absolutely necessary to preserve compatibility with all those real-mode DOS device drivers."

Casement writes for *Computerworld New Zealand*.

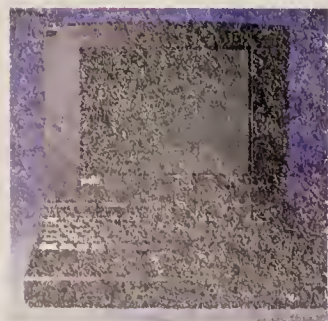


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## New Products

**ThunderByte** has announced ThunderByte Anti-Virus Utilities 6.2, antivirus software for Windows.

According to the Cornwall, Ontario, company, ThunderByte Anti-Virus Utilities 6.2 provides improved generic signature-detection logic to identify and repair damage from polymorphic encrypted viruses.

An AllExec option lets users scan all or selected drives when executing files. When files are copied, the product will automatically scan no matter what drives are involved.

ThunderByte Anti-Virus Utilities 6.2 costs \$80.

► **ThunderByte**  
(613) 930-4444

**Caere Corp.** has announced OmniPage Professional 5.0, optical character recognition (OCR) software for the Macintosh.

According to the Los Gatos, Calif., company, OmniPage Professional 5.0 in-

cludes three-dimensional OCR that uses grayscale information during the recognition process.

Features include deferred processing for scanning batches of documents at one time, zone template for accommodating forms and special documents and recognition of mathematical symbols and other characters outside the ANSI character set.

OmniPage Professional 5.0 costs \$695 and comes with Caere's Image Assist image editing software.

► **Caere**  
(408) 395-7000

**IPC Technologies, Inc.** has announced Business Audio notebook, a portable multimedia presentation system.

According to the Austin, Texas, firm, Business Audio notebook features 1M byte of video RAM, a built-in speaker and microphone, external speaker jacks and a 32-bit local-bus Windows accelerator.

The product includes a 16-bit sound module, 4M bytes of RAM, 16K-byte internal cache memory, an internal 3½-in., 1.44M-byte floppy disk drive, an optional hard disk, a 16mm trackball with palm-

rest panel and PCMCIA slots.

Prices start at \$2,849.

► **IPC Technologies**  
(512) 339-3500

**Gateway 2000, Inc.** has announced the Handbook DX2-50 subnotebook.

According to the North Sioux City, S.D., firm, the Handbook DX2-50 includes an enhanced motherboard, an Intel Corp. 50-MHz DX2 processor and a 250M-byte hard drive in a 9.75-by-5.9-by-1.6-in. unit.

The subnotebook comes with an external floppy drive, two NiMH batteries, an integrated EZ Point pointing device, parallel and printer adapters, a serial port and preloaded software including Microsoft Corp.'s DOS 6.22, Windows for Workgroups 3.11 and Office Pro.

A suspend-resume feature lets users shut down the system and return to the same location with a keystroke.

Prices start at \$2,499.

► **Gateway 2000**  
(605) 232-2000

**Aquiline, Inc.** has announced Hurricane notebooks with 680M-byte hard drives.

According to the Troy, N.Y., firm, the Hurricane notebooks include an Intel Corp. 100-MHz i486DX4 processor, a built-in trackball, a 16-bit sound chip, an internal speaker, a 1M-byte graphics accelerator and 20M bytes of RAM. Features include a 10-in. active color display,

PCMCIA slots for communication with peripherals and full battery power.

Prices range from \$4,790 to \$10,955.

► **Aquiline**  
(518) 272-0421

**Olivetti Canada Ltd.** has introduced the Echos line of notebook computers.

According to the Markham, Ontario, firm, the Echos line comes with 4M bytes of RAM, local bus for advanced video performance, hard disk capacity of up to 240M bytes and two PCMCIA slots.

The modular electronic board was designed to allow future CPU upgrades. The keyboard was positioned to the rear of the case, with the trackball pointing device mounted centrally at the front.

The Echos 42 with monochrome screen costs \$2,841, and the Echos 44 Color costs \$4,297.

► **Olivetti Canada**  
(416) 477-8250

## Product short

**Itronix Corp.** has announced the T5000 Extended Functionality Package (EFP), a wireless, ruggedized mobile computer. The T5000 EFP is PC-compatible and features a low-power reflective display, a programmable PC keyboard and an integrated 14.4K bit/sec. land-line modem. Cost: \$4,000 to \$6,000. Itronix, Spokane, Wash. (509) 624-6600.

## Compaq

CONTINUED FROM PAGE 39

the information contained in the guide, a company spokeswoman said. The label, which warns users about the "risk of serious injuries from working at your computer workstation," asks users to follow the directions in the guide to "minimize the risk of injury and increase your comfort."

At least one user lauded Compaq's efforts to warn of the potential hazards of prolonged and improper use of computers. "It's information. As long as [Compaq] informs users and gives them generally accepted safety tips relating to computer use, I don't see any problems," said Randy Shaw, a senior end-user services analyst at the Federal Reserve Bank of Baltimore.

Shaw said he has received a minimal number of computer-related complaints, most of which have been resolved on a case-by-case basis. The bank already follows ergonomic standards and provides users with pull-out keyboards, adjustable furniture, mouse pads and so forth. "If somebody wants a wrist rest or something, we simply get it for them," Shaw noted.

Robert Dieterich, managing editor of the "VDT News" newsletter in New York, agreed that Compaq's warning label could help avert future lawsuits. He said the move was clearly triggered by the rash of lawsuits charging that keyboards cause arm and wrist injuries such as carpal tunnel syndrome.

Dieterich praised Compaq's action as timely, sensible and "the right thing to do."

Directing users to read the manual is not a trivial matter, Dieterich added. "A significant chunk of users never read the manual, and some people at work don't

even have access to manuals, especially hardware manuals," he said.

One downside is that plaintiffs with pending lawsuits could argue that Compaq's action amounts to an acknowledgement that keyboards are part of the problem. Compaq has consistently denied that assertion and recently won a jury trial by arguing that its keyboard was not the cause of a legal secretary's crippling wrist injury [CW, Feb. 28].

"Plaintiffs could argue that this shows that warning labels are a practical thing to do," Carnevale said. "However, courts don't want to penalize [companies] for fixing things."

### Shifting the burden

Still, not everyone was satisfied by the precedent established by Compaq. According to 9to5, the National Association of Working Women in Milwaukee, labels on computer keyboards are little more than an attempt to absolve the computer industry and make employees responsible for their own work-related injuries.

"What computer operators need is a safe working environment, not warning labels," said Ellen Bravo, executive director at 9to5. Without standards that require employers to provide safe workstations and adequate breaks from repetitive keyboarding, users will continue to suffer from computer-related injuries, Bravo added.

"If you don't frame the problem right, you cannot solve it," she said.

On the federal government level, the Occupational Safety and Health Administration (OSHA) is almost ready with a new set of ergonomic standards that address computer and other workplace issues, according to Barbara Silverstein, a special assistant at OSHA. The standards are expected to be announced by the end of the fall and will be tested for a year before OSHA implements them, Silverstein said.

# UGH.

"The other day, a guy strolls in with spilled coffee all over his keyboard. A 'kaput notebook', he says, and he wants it back 'pronto'. As if I just sit around waiting for the next notebook problem to walk through my door."

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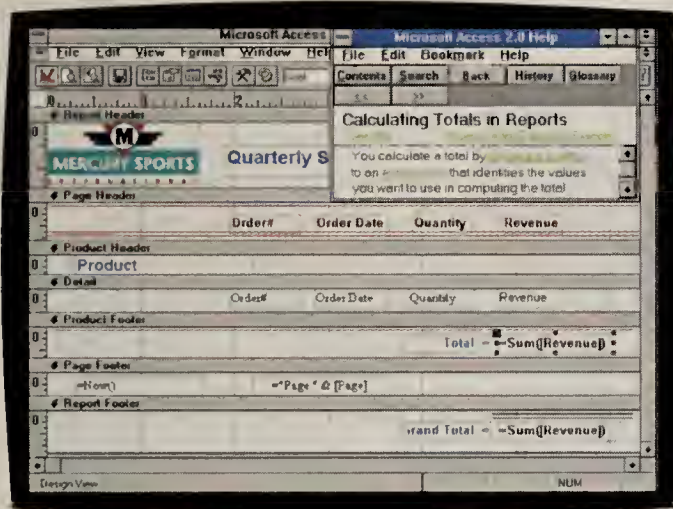
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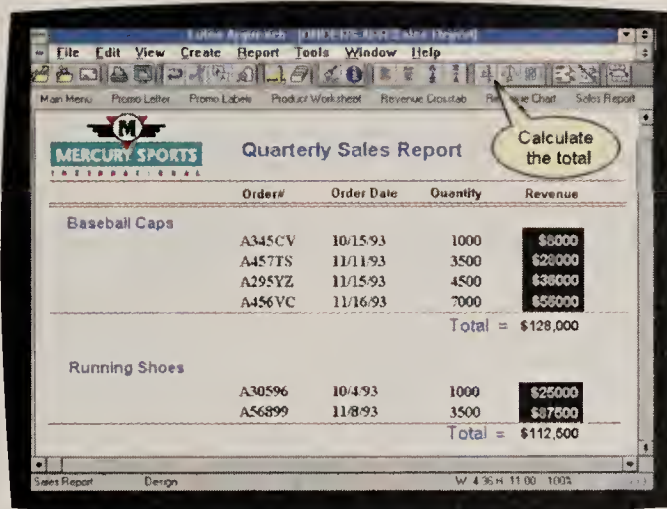
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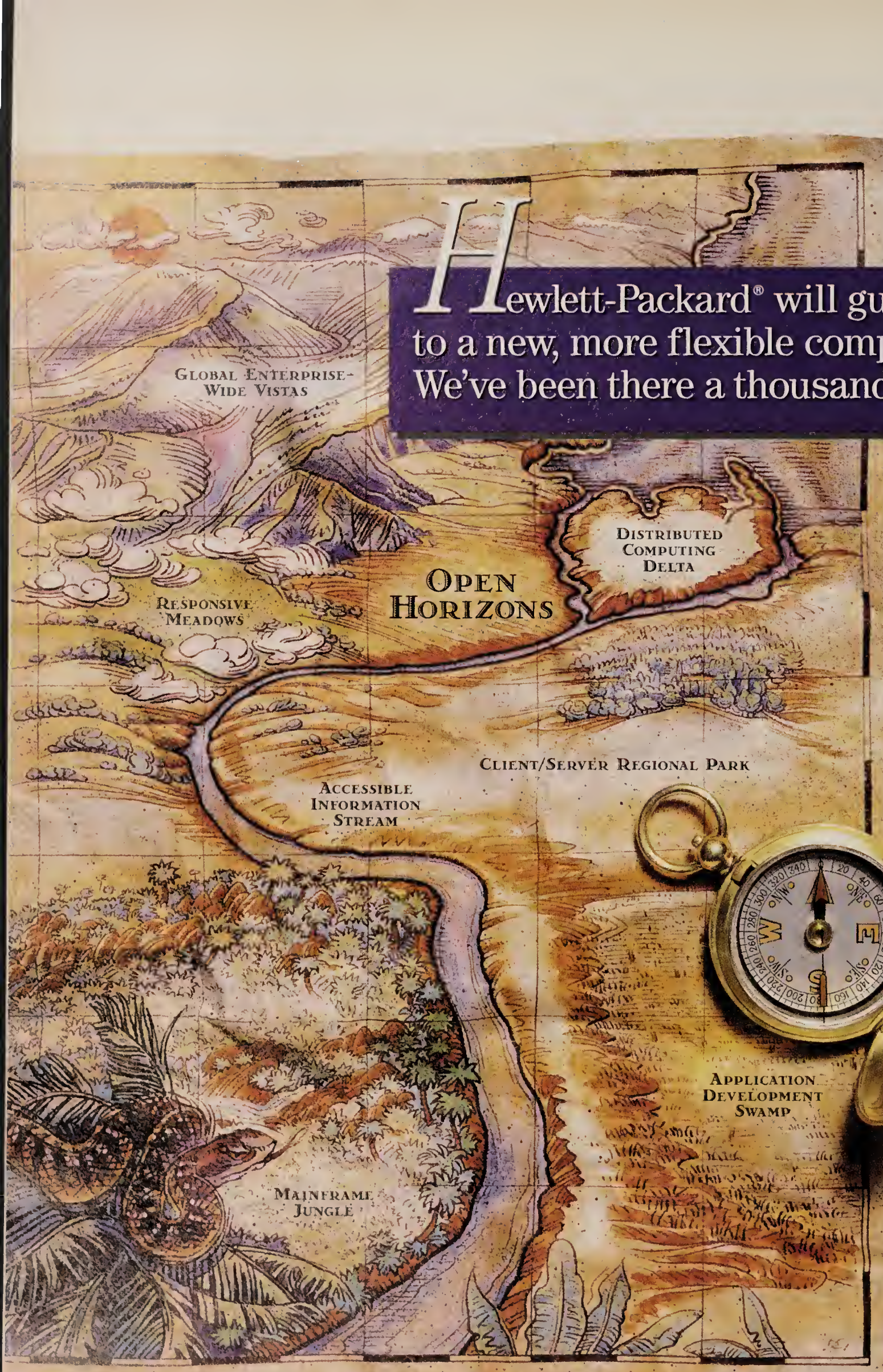
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## Vendors bump up PC server capabilities with Pentium

Performance nears minicomputer level; reliability still in question

By Jaikumar Vijayan

■ **Zenith Data Systems and Hewlett-Packard Co. have joined the lineup of vendors hoping to push the PC server performance envelope with multiprocessor-enabled, Pentium-based systems. Last week, the two companies announced high-end Pentium additions to their respective server families.**

Zenith Data's Z-Server GT series is based on Intel Corp.'s 90-MHz Pentium processor and can be configured with up to four processors. It has a maximum installable RAM of 1G byte and disk storage of 24G bytes.

HP has announced a 100-MHz Pentium addition to its NetServer LM series. Sources briefed by HP said it plans to provide up to four-way Pentium processor support on its symmetrical multiprocessing systems sometime next year. The only multiprocessor server that HP now offers is a two-way, 66-MHz Pentium-based NetServer LM model.

As companies such as Compaq Computer Corp., AST Research, Inc., HP, Zenith Data and Dell Computer Corp. jockey for position to make the PC play across the enterprise, users and analysts are beginning to pay closer attention.

Users can expect to get near-minicomputer performance at drastically lower prices while vendors push the server performance envelope, predicted Matt Cain, an analyst at Meta Group, Inc. in Westport, Conn. "This is the most power you can get from a mainstream PC vendor on Intel architecture," Cain said. "If you take

multiprocessor systems from a company like HP, it begins to bump up against traditional minicomputer segments."

James Greene, an analyst at BIS Strategic Decisions in Norwell, Mass., said, "Systems like these fall somewhere in the midrange for both users consolidating their applications from low-end systems and for those seeking to downsize from larger systems."

High-end PC servers could provide a low-cost entry point for users seeking to migrate their applications to larger systems, he added.

### Sample server configuration

Series	HP NetServer LM	ZENITH DATA Z-SERVER GT
Processor	100-MHz Pentium	Up to 4 90-MHz Pentiums
Memory	16M-byte RAM	32M-byte RAM
Storage	Up to 2G bytes	1G byte
Expansion slots	8 EISA	3 EISA, 2 PCI, 1 PCI/EISA
Starting price	\$8,849	\$14,000

Already, the road maps of most major PC server vendors provide scalability from low-end, low-cost i486-based systems to two- and four-way Pentium processor-based systems.

However, some users may need more than price to lure them away from traditional minicomputer platforms. While they are content to use these systems as departmental-level servers, at least a few balked at the idea of running the enterprise on PC platforms.

"Sure a lot of vendors have some really high-performance multiprocessor systems in the market, but the absolute biggest difference is the high availability, fault tolerance and the I/O performance" between these servers and something such as a Tricord Computer Corp.'s superserver platform, said Shawn Gilbert, assistant information systems manager at CardService International in Pasadena, Calif.

### No easy task

Analysts agreed that traditional PC vendors will have their work cut out for them breaking into the IS glass house. Apart from hardware issues, network operating systems that support multiprocessing are only beginning to ship and gain market share. The increased availability of operating systems such as Microsoft Corp.'s Windows NT Server, The Santa Cruz Operation's SCO MPX, Novell, Inc.'s NetWare MP and OS/2 SMP are expected to fuel the growth of multiprocessing-capable application servers, according to analysts.

While companies such as HP, IBM and more recently Compaq may have an easier time positioning their PC architectures in the application and database server markets, other PC vendors still must convince IS of their capabilities in areas such as reliability, availability and management software, Greene said. PC vendors will have to prove why their architectures, though more economical, should replace traditional superserver systems, he said.

Currently, Compaq, HP and IBM dominate the PC server market space, though other vendors, notably AST Research and Dell, have been making inroads, analysts said.

## L.A. law firm swaps Unix for NT to drive Macintoshes

By Mark Halper

Neither Microsoft Corp. nor Apple Computer, Inc. has committed to porting Windows NT to the Power Macintosh, but that is not stopping Howrey & Simon from turning to NT Advanced Server to drive many of its 700 Macintoshes.

The Los Angeles law firm has embarked on a project to replace some 50 Unix servers with multiprocessing Pentium-based Compaq Computer Corp. ProLineas. The servers, which will reside at company headquarters and at offices in Denver and Washington, will support financial, back office, document storage and library management systems.

Howrey & Simon has been using a mix of Apple Quadras and IBM RS/6000s running the AIX and AIX operating systems and supporting an Oracle Corp. database. But the combination of NT Advanced Server supporting a Microsoft SQL database offers radi-

cally better prices, said Matt Ghourdjian, the law firm's national director of technology. An Intel Corp.-based NT solution could cost about \$150,000 for 300 users; a comparable Unix solution could exceed \$500,000, he said (see chart).

"The paradigm has changed, and it's ugly for Unix," said Ghourdjian, who is using Microsoft's FoxPro 2.6 as a front end for the SQL database. "The price/performance is staggeringly in fa-

vor of NT solutions," he said.

So far, no networking incompatibilities have surfaced between NT Advanced Server and the System 7-based Macintoshes, which Ghourdjian is slowly migrating from 680x0-based boxes to PowerPC-based systems, he said. Some Apple users have reported difficulties mixing Power Macintoshes on a network with 680x0-based Macintoshes [CW, Aug. 1].

Still, Ghourdjian — who is using Ethernet to tie Macintosh clients into the Compaq NT servers — is not taking any chances. "I bought a Sniffer today," he said, referring to the Network General Corp. networking trouble detection device. "We invest a ton of money in our network management, and we're always trying to add to our repertoire."

### No problem

Bill Cornfield, president of New York consultancy The Windows Support Group, said tying Macintoshes and Power Macintoshes into NT servers should raise no more challenges than tying Apple com-

puters into Unix servers.

"It's more of an issue of NT vs. Unix than anything having to do with the Macintosh," he said. Cornfield said he is partial to NT over Unix because he finds NT easier to manage and more reliable.

At one Macintosh site, The Windows Support Group provided the end user with programming interfaces to a SQL Server database program written by the consultancy. The customer then developed its own client for accessing the database program, Cornfield said. He declined to identify the customer.

An Apple spokesman said tying Macintosh computers into NT is less problematic than tying into Unix, primarily because NT supports the AppleTalk networking protocol and the Apple File Protocol (AFP) that comes standard with each 680x0- and PowerPC-based Macintosh. Macintoshes tied into a Unix server require users to add TCP/IP and Network File System protocols, he said.

"It's easier to connect Macintosh into Law firm, page 49

### Pricing paradigm

HOWREY & SIMON'S PLAN TO SWAP UNIX WITH WINDOWS NT ADVANCED SERVER COULD SAVE THE LAW FIRM HUNDREDS OF THOUSANDS OF DOLLARS

	NT	UNIX
Database	SQL Server unlimited license \$9,500*	Oracle 500-user license \$380,000*
Operating system	Unlimited license \$955*	300-user AIX license \$60,000*
Hardware	Compaq four-processor, 66-MHz Pentium system, \$30,000*	IBM RS/6000 model 590, \$100,000*

\*Estimate

### Steady progress

Howrey & Simon has converted file and print servers to NT Advanced Server from Unix. Next on the list is its Denver-based imaging server, and it hopes by January to start converting its mail server from Unix to NT Advanced Server. It will also swap Microsoft Mail for Microsoft's next-generation Information Exchange.





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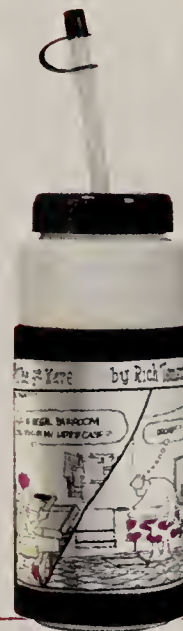
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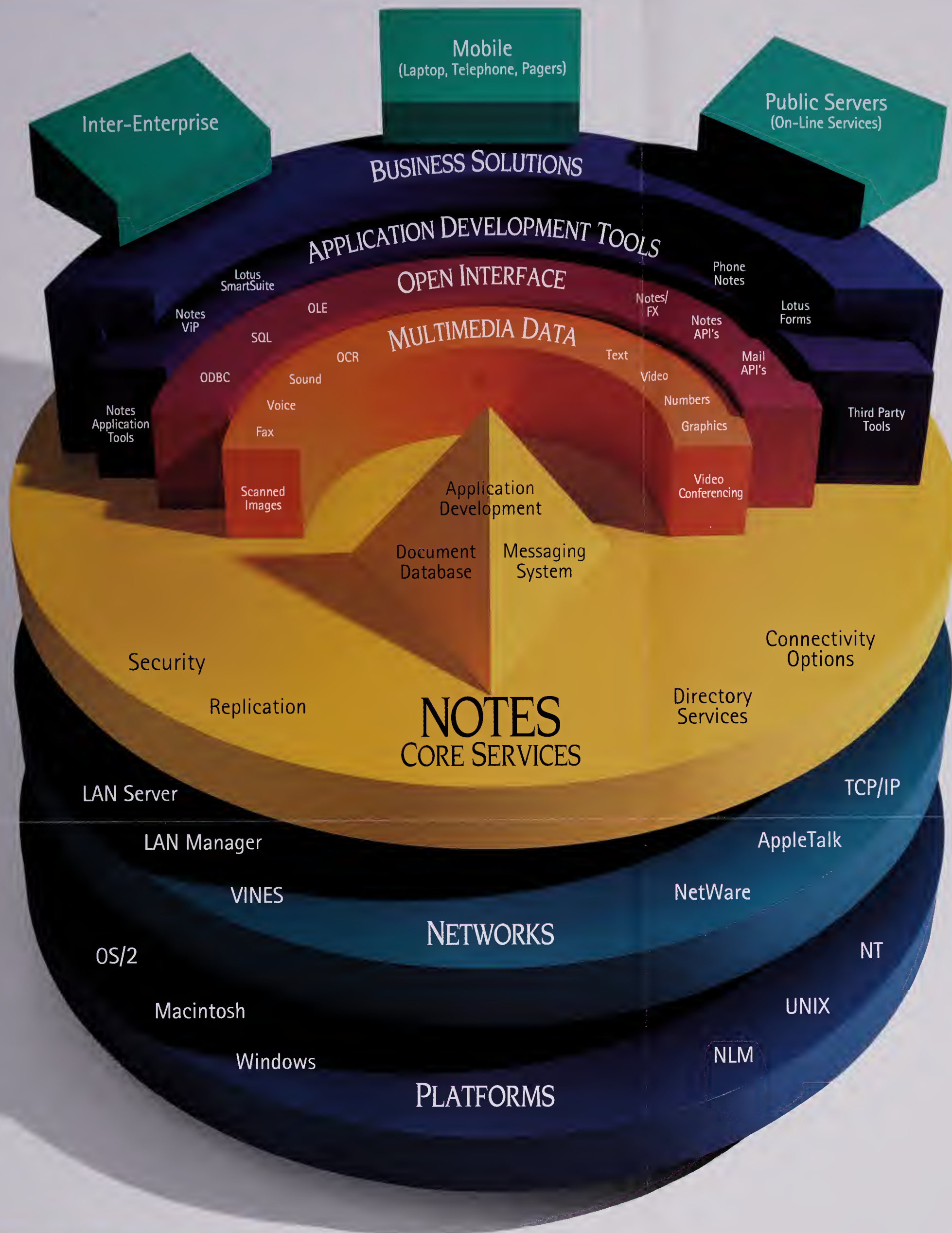
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# LOTUS NOTES. THE FOUNDATION FOR A NEW WAY TO WORK.



## WHAT NOTES IS.

Notes is a robust client/server platform for developing and deploying groupware applications. At the center of Lotus Notes are its core system services. These include a sophisticated programming environment optimized for building strategic applications, a distributed document database and an integrated messaging system, all built from the ground up to work together seamlessly.

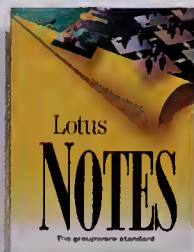
Business information comes in many forms, from numerical data to rich text, compound document objects, voice and even video. Notes' object store supports all these data types. In addition, a Notes companion product, Lotus Notes Document Imaging (LN:DI),™ allows workgroups

to access, OCR and share scanned images as part of Notes applications.

Notes' unique replication technology is central to its workgroup power. It allows an enterprise to distribute Notes databases to all server and client locations with automatic, bi-directional synchronization of information between users.

Notes makes it possible to run an efficient, distributed organization with satellite offices and mobile personnel all working from the same critical business information. And it allows businesses to share information with other businesses — vendors or partners who can benefit from shared knowledge. Since business information is often sensitive and confidential, Notes security features are robust and flexible to accommodate this inter-enterprise communication.

Notes applications do not replace your existing systems; they build on them, leveraging your technology investment. Notes provides connectivity with legacy systems — whether they



are host-based or LAN-based messaging systems; and with relational databases, through a variety of tools supporting important industry standards such as ODBC and SQL, or popular application development tools.

## WHAT NOTES IS BUILT ON.

Lotus Notes runs on all the most popular platforms and operating systems as both clients and servers. It supports a broad range of network protocols and network operating systems. This makes it easier than ever for workgroups to communicate and collaborate across an entire organization or between organizations — even in a mixed computing environment.

## WHO BUILDS ON NOTES.

Third party technology providers have been quick to recognize the potential of Notes. Right now, thousands of Lotus Notes Business Partners are marketing a broad range of products and services for Notes. These range from products that extend Notes, such as workflow and document management products, to application development and database integration tools, to complete solutions for professionals in the health care, legal, pharmaceutical, insurance, manufacturing and banking fields.

Notes enables a core set of strategic applications: those that involve a high degree of coordination between people, such as customer service and product development. Notes comes with a complete set of working applications that require little or no modification, so that users can begin working with Notes to improve key business processes immediately. These applications also act as templates, which users can easily modify to meet their needs.

Notes also provides power users with the ability to quickly create workgroup applications using Notes views, forms, formulas and macros. Lotus' open integration technology, Notes/FX,™ allows any user to build applications that integrate desktop tools, such as Lotus SmartSuite,® into powerful Notes-based workgroup applications.

Notes developers can now choose from a variety of tools. For example, Lotus has developed Notes ViP,™ a visual programming environment designed to allow developers to rapidly build sophisticated Notes applications. Phone Notes™ is a tool kit that allows developers to quickly integrate voice response into Notes applications, enabling the telephone to become a Notes client. And Lotus Forms™ automates paper-based workflow applications across an extended enterprise including Notes, cc:Mail™ and MS® Mail.

Professional developers can also use third party tools, such as Powersoft™ PowerBuilder,® Microsoft Visual Basic®, and Gupta™ Technologies SQL Windows®. These products, which are used primarily to build RDBMS applications, have been extended to query and update Notes databases. C and C++ programmers can also write directly to the Notes API to create new Notes applications and/or tools and services.

## HOW NOTES EXPANDS COMMUNICATIONS.

More and more, the modern office extends beyond the walls of a single building to include the traveling professional, business partners and the lone eagle. Notes employs a number of communications techniques that allow occasionally connected users to keep in sync with other members of the workgroup and to send and receive urgent information.

Notes supports a wide range of solutions to allow mobile professionals to work with the information they need to do their job. Users can create full or partial replicas of databases. These replicas can be made at the desktop before a user disconnects from the network, or from any remote site with a telephone jack. Partial replication allows the user to carry only those documents of particular relevance (e.g., those authored by a particular person), reducing connection time and saving disk space. Finally, Notes' support of mobile devices such as hand-held accessories and pagers, allows the mobile user to be notified of important messages that they can retrieve from a fax machine or even from a nearby telephone using Phone Notes.

The boundaries of the Notes environment are constantly expanding. With the addition of public Notes servers from industry leaders such as AT&T and others, the power of Notes is now available to individuals to read their favorite periodical, find the latest market research information, and collaborate with their association members or business partners, all via Notes. As business changes and technology evolves, Notes keeps you on top of the critical business information you need to stay ahead. For a free copy of the IDC ROI Study, *Lotus Notes: Agent of Change*® or for a free demo disk, call 1-800-828-7086, ext. 9943.\*

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Commentary

Ken Lownie

# Redefining groupware



Since its introduction in 1989, Lotus' Notes has been synonymous with groupware. Our understanding of groupware has been defined by Notes.

However, before too long, that may change.

It would be hard to overstate how well Lotus has marketed Notes. By initially limiting the sale of Notes to a Lotus direct sales force dealing in 200-unit, \$65,000 license bundles, Lotus ensured customers would invest the time and energy required to appreciate the potential of this technology.

Since then, Lotus has used the skills it honed while marketing 1-2-3 to encourage the development of an entire market around Notes, including add-on product vendors, training companies, consultants and VARs. And throughout the life of Notes, Lotus has helped ensure a steady stream of press coverage for the product and the emerging market around it.

But Lotus' biggest accomplishment in marketing Notes has been to define an entire market segment on its own terms. Although International Data Corp. and other research groups have defined various categories of the groupware market, the reality is that most of us think of groupware based on the Notes model: a replicating document store tightly integrated with an E-mail system and an accompanying development environment and user interface.

More important, we think of Notes — and therefore groupware — as more than the sum of these components. Part of the mystique of Notes is the way the pieces come together as an integrated environment that allows us to build an entirely new class of applications.

## Second to none

Lotus' success in defining the market can be seen in the fact that most of us think of groupware specifically in terms of the Notes model, which creates an enormous market advantage for Lotus. To be viewed as a real player in the groupware market, you have to match Lotus on its own terms — with an all-in-one-box solution, including a replicating document store. And no one has been able to do that.

Now the situation may change. Competition from Microsoft and Novell may force us to redefine our groupware requirements based on a best-of-breed model in which components of the groupware platform are mixed and matched as needed, rather than the integrated-pack-

age approach of Notes.

In WordPerfect's Groupwise (formerly Symmetry and Office), Novell acquired many of the pieces of the groupware puzzle, including a well-integrated E-mail, calendar and forms suite. With the Soft-Solutions product, it also has an accompanying document management system. The Groupwise vision still lacks a true, Notes-like distributed document store capability, however. This means Novell will be working hard to redefine groupware in terms of component pieces so it can compete effectively without being hamstrung by the lack of a distributed document store capability.

## Expanding battlefield

Meanwhile, with its Exchange Server announcements, it is clear that Microsoft will emerge (eventually) with a document store capability. But Microsoft, like Novell, will be touting a groupware platform that emphasizes a number of other components, including calendar/scheduling, forms capabilities and a flexible set of developer tools. In the Microsoft model, the groupware components can be mixed and matched based on a common glue: MAPI 1.0. No doubt Microsoft will emphasize the mix-and-match capabilities its approach enables, allowing it to take on Notes piece by piece.

Lotus is also contributing to a broader and clearer vision of groupware. With the release of VIP, its new alternative development environment for Notes, Lotus is helping break down the mystique of Notes. The emergence of VIP and the bevy of other data access and developer tools separates Notes from its native development environment and user interface, allowing us to see Notes more clearly in terms of its component parts.

## Lotus' evolution

I have no doubt that these factors will mean an evolving redefinition of groupware. This puts Lotus in a tight spot with Notes. The more it buttresses its individual groupware components, the more it helps the competition "dismember" our understanding of Notes. Eventually, Lotus will have to fight a battle on many groupware fronts, not just one.

Lotus still has the upperhand because neither Microsoft nor Novell can ante up a distributed document repository capability.

It is a race against time. Can Lotus move quickly enough with quality responses on all the groupware fronts before the competition redefines the market and put its own pieces in place? So far, it is impressive that it has plugged a hole with Lotus' Forms and bolstered its tools story with VIP. But holes remain — Organizer is not yet a viable entry in the calendar/scheduler category — and Lotus will have to move quickly and effectively if it wants to continue to set the standard in the evolving groupware market.

Lownie is president of Connexus Consulting Group, an Andover, Mass., firm specializing in groupware deployment and development. He can be reached through the Internet at [kenlownie.connexus@notes.compuserve.com](mailto:kenlownie.connexus@notes.compuserve.com).

# Design firm flies through airport project with CAD

By Anna Foley  
HONG KONG

Architecture firm Foster Asia had just two years to design the Chep Lap Kok airport terminal building. The company chose Intergraph Corp. computer-aided design (CAD) systems, and some 10,000 drawings later, completed the project on time.

Having won the contract for the architectural design of the building in early 1992, the company joined forces with Australian engineering firm Mott Connell and formed the Mott Consortium.

Foster Asia was awarded the overall design coordination role. Director Winston Shu said this involved keeping track of a multidisciplinary team of more than 200 professionals, handling architectural design, structural design, civil engineering and production of specialized airport systems.

With such a large staff, the computer system was the main link among them. The consortium purchased Intergraph Clipper Unix workstations as servers and Intergraph PCs for each technician and linked them using a 10Base-T LAN. Five LAN segments separated the different professional teams. Intergraph is based in Huntsville, Ala.

"We needed to make our systems common with the Provisional Airport Authority [PAA], so we spent some time discussing ways to take the technology forward," Shu said.

While the PAA wanted to use PC-based CAD system AutoCAD, Foster Asia's experience in the UK indicated that Intergraph systems were better at handling large projects, he noted.

According to Andy Raishbrook, CAD

manager at Foster Asia, Intergraph workstations and the MicroStation environment have two advantages over AutoCAD in a venture like the airport terminal building design. First, MicroStation on a Unix workstation can process large amounts of data much faster than AutoCAD on a PC. Second, MicroStation has reference file capabilities.

Given the size of the proposed terminal building and the number of design professionals involved, one of the biggest challenges of the project was dividing up the design in a logical and workable way, Raishbrook said.

## High priority

One priority was to enable individuals from different disciplines to work on the same area of the building and easily check to see what changes had been made, Shu added.

Since architects need to work on all sorts of aspects of designs — in this case,

vertical structure, horizontal structure, signage and interior planning, among others — the team defined 15 discrete aspects that could be stored in separate files.

"So for each of the nine building levels, architects could work on 15 different aspects of the design," Raishbrook said. "The key was that using MicroStation's file reference capability, they could then overlay files to create composite drawings."

In contrast, the structural engineers on the project used AutoCAD for their designs largely because of the breadth of engineering packages available for the AutoCAD PC environment.

Foley is a correspondent at *Computerworld Hong Kong*.

For each level, "architects could work on 15 different aspects of the design. ... Using MicroStation's file reference capability, they could overlay files to create composite drawings."

— Andy Raishbrook, Foster Asia

# Law firm

CONTINUED FROM PAGE 47

an NT environment, but one of the reasons Unix is more popular is there are more applications in the Unix space than in the NT space," he said.

Like NT, Novell, Inc.'s NetWare operating system also includes built-in support for AppleTalk and for AFP, although Apple users must install Novell's IPX protocol to take advantage of NetWare's directory services. Like Unix, NetWare has more market penetration than NT.

"Most enterprise customers go with NetWare for high-performance file and print servers and Unix for application servers," the Apple spokesman said.

Howrey & Simon's decision to move to NT was instigated in part by its financial

software provider, Wehrheim Systems, Inc. in Woodland Hills, Calif., which is switching platforms from Unix to NT, Ghourdjian said.

Ghourdjian said he was also encouraged by forthcoming technology from both Apple and Microsoft. Apple is expected in November to add a 100- or 120-MHz box to its Power Macintosh line, which today tops out at 80 MHz. Microsoft is expected soon to release a more efficient version of NT, code-named Daytona.

Training and maintenance costs were also factors that pushed Ghourdjian away from Unix and toward NT.

"Our guys came up to speed on NT and were totally functional with one five-day class and a week of hands-on," Ghourdjian said. "You're not going to find somebody who is fully functional with Unix after a five-day course."



# PC-Xware update gives gateway a Chicago look

By Jean S. Bozman

Network Computing Devices, Inc. (NCD) recently enhanced its year-old PC-Xware 1.0 software, which connects IBM-compatible PC clients with remote Unix servers. PC-Xware 2.0 was designed to deliver a Windows look and feel — instead of an X Window System terminal look — while it provides a gateway to Unix applications.

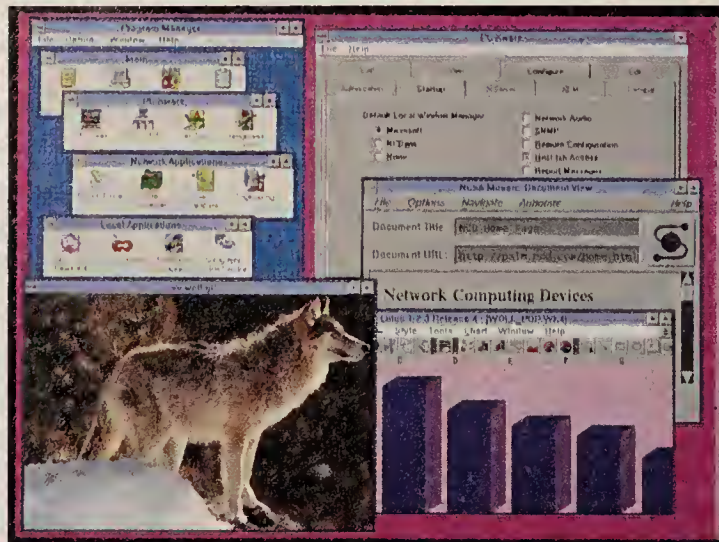
PC-Xware 2.0 started shipping to users this month.

The new package, a PC-X server product, comes complete with the type of "folder tabs" used in Microsoft Corp.'s upcoming Windows release called Chicago, said NCD President Judy Estrin. It also allows users to establish multiple communications sessions with remote Unix servers and display them on the PC screen in one or more XWindows, Estrin said.

"It looks the way Chicago looks," said Estrin, adding that \$144 million NCD, based in Mountain View, Calif., is partici-

pating in Microsoft's beta-test program for the Chicago operating system.

Major enhancements in PC-Xware 2.0 include a speed boost of about 20%, a built-in TCP/IP protocol stack, simplified



PC-Xware 2.0 was designed to give the look and feel of Windows rather than that of an X Window System terminal

installation and support for remote configuration of remote users' PCs.

PC-Xware 1.0 has a look and feel similar to NCD's X terminal hardware prod-

ucts, said Eileen O'Brien, an X terminal analyst at research firm International Data Corp. (IDC). A Windows look and feel has been added in 2.0 to match the end user's Windows desktop.

One important feature of 2.0 is that one copy can be loaded on to a LAN server and shared by workgroups, early users said. That simplifies administration and lowers per-user costs.

"The prior release required everybody to have their own individual copy," said Haam Tham, chief architect at Sherpa Corp., a San Jose, Calif., engineering software firm. The individual copies took up valuable hard disk space on each PC, he explained.

## Top speed

Other users said they were pleased with PC-Xware 2.0's improved speed of display.

"The big difference we've seen is that the speed is considerably faster than any other X software we've seen," said David Sippey, manager of engineering systems and services at software firm Square D Co. in

Nashville.

While performance is good for two-dimensional graphics, PC-Xware 2.0 is not quite as fast as a state-of-the-art

X terminal, he said.

Industry analysts said PC-X software is proliferating as users combine PC clients with Unix servers. Major PC-X vendors include NCD; Hummingbird Communications Ltd. in Markham, Ontario; and AGE Logic, Inc. in San Diego.

## Window of opportunity

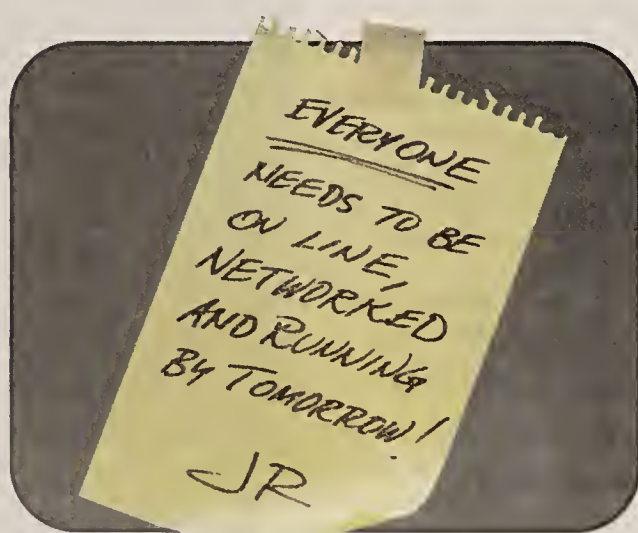
PC-Xware 2.0 can support multimedia applications, such as Mosaic, that are used on the Internet. Users can have voice-annotated electronic mail and display digitized sound and graphics data stored on remote Unix servers.

In 1993, nearly 400,000 PC-X software packages shipped, outstripping some 300,000 X terminal hardware shipments, according to IDC. The

trend is expected to continue because PC-X software priced at several hundred dollars can provide functionality similar to that of X terminals that cost several times as much.

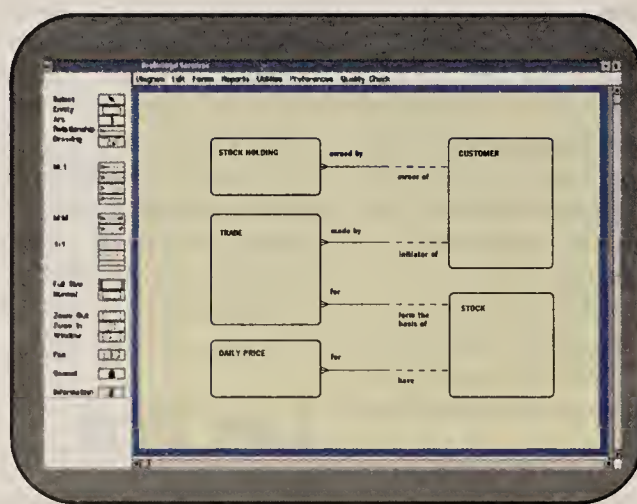
Pricing for PC-Xware 2.0 is \$545. PC-Xware 1.0 users can buy an upgrade kit for \$125, the firm said. However, a version of PC-Xware 2.0 that includes NCD's NetPack software is priced at \$735, and a version that includes NCD's NetPack NFS costs \$795.

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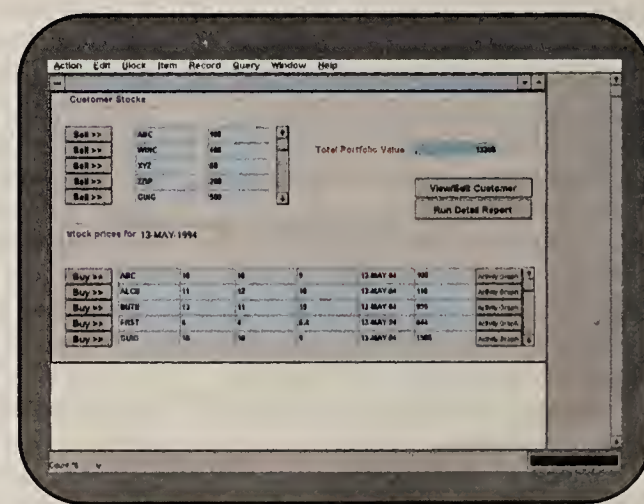
Today 08:46 13/05/1994

"Hope you didn't have any plans for the weekend"



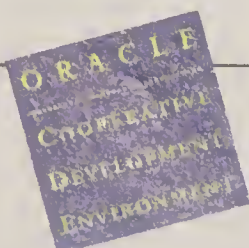
Today 08:46 13/05/1994

"...Finance, Accounting, and our subsidiaries need to tie in to the financial tracking system..."



Today 13:12 13/05/1994

"...oh...did we mention that this needs to tie-in with our Portfolio Tracking System?"



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## New Products

**Concurrent Controls, Inc.** has announced Novell DR Multiuser DOS Lite, a single-user version of Novell, Inc.'s DR Multiuser DOS operating system.

According to the San Francisco firm, Novell DR Multiuser DOS Lite lets a single PC run multiple applications simultaneously. It also supports multiple session connectivity to a NetWare server from a single network interface card.

Up to eight sessions can be active on a PC at once. One session can be active in the foreground while the others are running in the background. The software supports full VGA graphics.

Novell DR Multiuser DOS Lite costs \$295.

► **Concurrent Controls**  
(415) 873-6240

**Asset Software International Corp.** has announced AssetPro 2.0, enterprise asset management software.

According to the Ottawa company, AssetPro 2.0 tracks the configuration, location, users and interrelationships of client/server PCs.

The product provides configuration management of customized electronic and nonelectronic assets and integrates asset procurement, management, data

collection and help desk features.

Prices start at \$14,995.

► **Asset Software International**  
(613) 723-7374

**3Com Corp.** has announced Transcend WorkGroup Manager and Transcend Enterprise Manager, graphical Simple Network Management Protocol (SNMP) management applications.

According to the Santa Clara, Calif., company, the products provide solutions to common network problems such as connectivity and the organization of device management tools.

Transcend WorkGroup Manager is a Windows-based SNMP workgroup management application for Ethernet hubs and adapters that provides a total picture of workgroup activity.

Transcend Enterprise Manager administers all connectivity systems including workgroup, backbone, wide-area network and remote office sites. It features integration of the user's device management, hub port-to-adaptor correlation and virtual grouping.

Transcend WorkGroup Manager costs \$495, and Transcend Enterprise Manager costs \$2,995.

► **3Com**  
(408) 764-5000

**Sybase, Inc.** has announced Sybase SQL Server 10 with support for Novell, Inc.'s

IPX/SPX protocol.

According to the Emeryville, Calif., company, Sybase SQL Server 10 with support for IPX/SPX is available on eight leading Unix platforms.

The product lets PC LAN users use IPX/SPX to directly access data managed by a Unix-based Sybase SQL Server without requiring additional networking protocol software.

Prices range from \$1,995 to \$256,160, depending on the hardware configuration and number of users.

► **Sybase**  
(510) 596-3500

**Kenan Technologies** has announced Acumate ES 1.1, client/server multidimensional database and on-line analytical processing software.

According to the Cambridge, Mass., company, Acumate ES 1.1 includes support for server-to-server connectivity, faster data loading and support for Microsoft Corp.'s Windows NT 3.5 and Excel 5.0.

A Focal Point Administrator module lets users load and configure multidimensional data.

Prices start at \$25,000.

► **Kenan Technologies**  
(617) 225-2224

**Arcland, Inc.** has announced FlowModel, diagramming software.

According to the Berwyn, Pa., company, FlowModel automates much of the process of drawing a diagram, offers a variety of diagram styles and captures important data associated with parts of the diagrams.

The product lets users view the flow diagram and the data behind it at the same time. Diagrams can be reorganized at the touch of a button, and notes can be added to each node and connection.

FlowModel costs \$495.

► **Arcland**  
(610) 993-9904

**Bristol Technology, Inc.** has announced HyperHelp 4, an on-line Unix help product.

According to the Ridgefield, Conn., firm, HyperHelp 4 supports every major documentation tool with a flexible programming interface and includes support for FrameMaker and Interleaf.

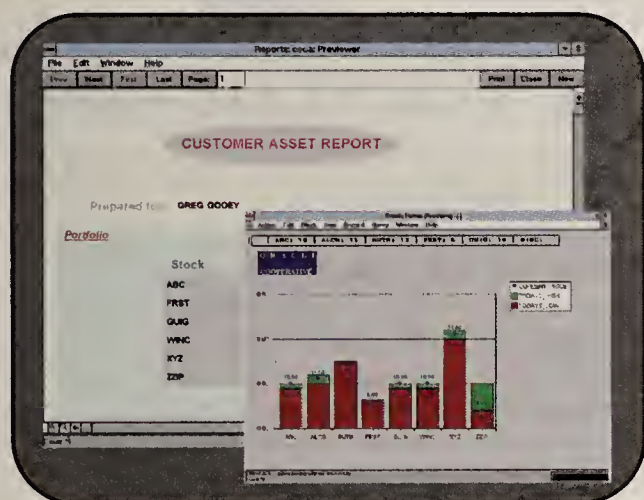
Features include user-added shared libraries, reporting, enhanced printing and find and sort improvements.

HyperHelp 4 maintains cross-platform compatibility with Microsoft Corp.'s WinHelp, with support for Dynamic Link Libraries so users can add data and link additional graphics and multimedia formats.

HyperHelp 4 costs \$5,000.

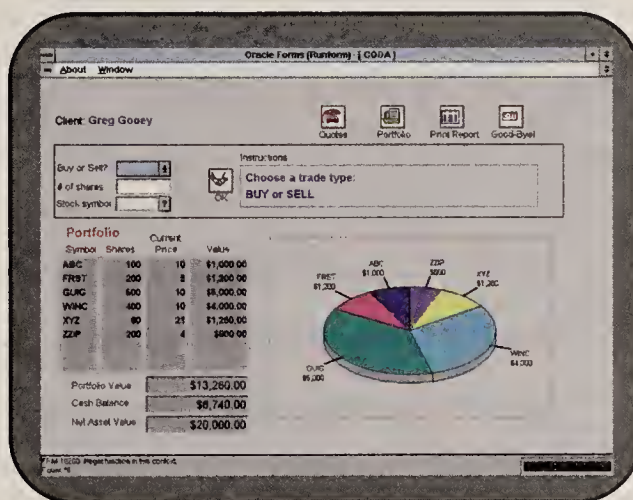
► **Bristol Technology**  
(203) 438-6969

## AND STILL HAVE TIME FOR THE IMPORTANT THINGS.



Today 14:55 13/05/1994

"...how about we show all the data graphically?"



Today 15:33 13/05/1994

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Today 17:14 13/05/1994

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The Magellan Passport enterprise network switch is just one part of the Magellan Broadband Multimedia portfolio of products and services that includes the new Magellan Access Switch for remote business offices, the Magellan DPN-100 frame switch, the Magellan Gateway carrier access switch and the Magellan Concorde backbone network switch. And all of this made possible by

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## START THINKING GIGA-FLEXIBLE. START THINKING MAGELLAN PASSPORT.

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## Electronic mail

# PC front ends bridge messaging gap

By Lynda Radosevich

A new option is emerging for firms that want to retain their host-based systems and give end users the advantages of PC-based electronic mail: graphical front-end software.

"There is a real need [for this software] because a large percentage of corporate mailboxes still are mini- or mainframe-based, and certain users want to access mail while traveling," said David Ferris, president of Ferris Networks, a consultancy in San Francisco.

"While clearly there is a big migration from these systems, it will be a while" before they disappear completely. Graphical front ends can help bridge the gap, he added.

To that end, Square One in Woodbridge, N.J., and CommTouch Software, Inc. in San Mateo, Calif., recently introduced separate graphical user interface software that provides PC access to host- and minicomputer-based office messaging systems and allows users to process messages off-line.

### Storing storage problems

Square One's Esperanto runs on Windows or Macintosh PCs and can access Digital Equipment Corp.'s All-In-1 and VMS Mail. Users only need to connect to the host to upload and download messages. Esperanto also enables users to store messages on the local computer. This reduces connection times and the amount of storage on the host system, customers said.

"Without this, we would use a terminal emulator, log in to the VAX and use the regular interface for All-In-1," said Matt Simpson, manager of office automation at Mitsui O.S.K. Lines (America) in Jersey City, N.J.

"That's OK, but then all user files have to reside on the VAX, which becomes a storage problem." Further, if end users work with the E-mail on-line all the time, "it increases network traffic by about one quarter," he said.

Mitsui is installing Esperanto. On its DOS-based machines, Mitsui uses MailCall from CappCom Software, Inc. as an E-mail front end.

Esperanto "lets users automatically log in to a session, grab the mail and log out. Also, they can store all files locally on the PC, so we don't have to archive it on the system," Simpson said. Features he would like to see added include hierarchical file storage and the ability to use fonts.

For its part, CommTouch's PMail 3.0 provides dial-up, wireless and 3270 connectivity to IBM Professional Office System (Profs) and OfficeVision. Due to ship Sept. 15, it costs \$450 per user for Windows and \$350 per user for DOS versions. Like Esperanto, it allows users to process messages off-line and can access the host over 3270, dial-up or wireless connections. It also includes calendar synchronization, support for binary attachments and dial-up and wireless file-transfer capabilities.

Kevan Smith, a product manager at National Semiconductor Corp. in Santa Clara, Calif., said he uses PMail 3.0 to access corporate Profs E-mail from a home

office. "It allows me to click on a button and then go away to make a cup of coffee. It logs on and brings down my E-mail in anywhere from two to 20 minutes, depending on the amount and the modem speed," he said.

Other Profs/OfficeVision front-end options on the market include software from Attachmate Corp. in Bellevue, Wash., and Wall Data, Inc. in Redmond, Wash.



### Future issues

A potential problem for the front-end packages is that they typically operate by "screen scraping," or pulling information off the host system's character screen. That means that if a user changes the Profs screen, the program can become confused because it has already been set up to go to certain portions of the Profs screen for information, Ferris said.

Another issue is price. The price of the software and the required Synchronous Data Link Control card can cost \$1,000, he said.

Attachmate gets around the screen scraper problem by operating — and looking like — a Profs node. Because of that technical advantage, Lotus Development Corp. partnered with Attachmate last spring to offer Zip Office Server for Lotus Organizer and CC:Mail, which links CC:Mail and Organizer scheduling to Profs and OfficeVision.

# Virus software for the '90s: Quick, easy and automatic

## McAfee's reworked VirusScan will be faster

## Scans become routine with Reflex's Disknet

By Gary H. Anthes

Antivirus medicine from McAfee Associates, Inc. is now easier to take. The company's latest software release, VirusScan 2.1, is easier to use, runs faster, uses less memory and is better at finding viruses, according to some early users. McAfee claims the scanner will detect more than 2,600 viruses.

VirusScan 2.1 is the first major overhaul of McAfee's products, which include software for virus detection and removal.

### No time to wait

"I was amazed how fast the new release is," said Mike Grayson, a systems engineer at FTC Computer Systems in Dallas. "That's the reason most people don't use antivirus software — it's too slow. They boot up in the morning and they have to wait five minutes to scan every file, so they disconnect it."

VirusScan exists in a full Windows implementation, replacing command-line entries with icons. However, system ad-

ministrators and other power users may still use typed commands for special functions.

Other changes in the architecture boosted performance by four to five times and reduced memory requirements by 29% to 300K bytes, while the price remained unchanged at \$129.99.

For better detection, McAfee added algorithms that go through program code looking for viruslike activity, such as attempts to attach to other programs. These techniques are especially effective in finding viruses that change, such as "polymorphic" and "mutation engine" viruses, said Phil Talsky, McAfee's product marketing manager in Santa Clara, Calif.

The vendor separated the data file of virus signatures — the bit patterns that identify a particular virus — from the scanning software. This enables easier VirusScan, page 57

By Stuart J. Johnston  
SEATTLE

It was a bad first week on the job for Scott Prindle.

Almost immediately, he came down with a serious viral infection. But the problem was not with his health, it was an infection of some of his co-workers' laptop computers.



"My first week, I had a serious infection that cost me two machines and a lot of time. And within another week and a half, I had another incident with various strains of another virus," Prindle said.

A few of the company's auditors had returned from user sites with infected computers, said Prindle, who is technology coordinator at the Seattle office of accounting firm Coopers & Lybrand.

While the firm has a companywide policy that every floppy disk must be scanned before it is inserted into an au-

ditor's laptop, often this is not practical. So Prindle went looking for a tool to do the job.

"You've got to take it out of the hands of the individual and make it routine," said Robert Campbell, president of Advanced Information Management, Inc., a Woodbridge, Va., security consulting firm.

One way to do that is for users to automatically perform a virus check every time they insert a disk into a drive, not just when the machine boots up.

Prindle said he also wanted antivirus medicine that worked over the network for when auditors returned to the office and hooked up their laptops.

### Striking gold

He found the answer in his backyard: Disknet from Reflex, Inc. in Brier, Wash.

The software runs over a network or on individual machines, automatically checking for viruses every time users log on to the network or every time they place a disk in a drive.

Disknet, page 57



# Motorola to recast network monitoring services

By Steve Moore

Treading further onto the turf of the world's most muscular outsourcing purveyors, Motorola, Inc. recently laid out plans to beef up its network monitoring services with an expanded and relocated monitoring center.

Motorola's Online Remote Network

Monitoring Center, which moved from Schaumburg, Ill., to Mansfield, Mass., will serve as the hub linking secondary on-line monitoring centers in Belgium, Canada and the UK.

Motorola captures and filters alarms and other data generated in a user company's wide-area network, performs trend analysis and notifies users if prob-

lems are present or likely to occur soon. The user specifies the ground rules for reporting and correcting problems that are identified.

Some customers — who could have chosen the network monitoring services offered by AT&T Corp. and Electronic Data Systems Corp., among others — are biting. "We're in the process of rolling out

1,000 more PCs in the next two months, and we will have Motorola manage the surveillance of all our LANs, routers and hubs," said the telecommunications manager at a large U.S. retail chain who asked to remain anonymous.

"I looked at doing it myself, but I felt I just didn't have the staff, real estate or time to gear up to do that," he added, noting that his enterprise network will eventually comprise as many as 700 LANs. He is a user of Motorola Codex equipment.

Motorola's network monitoring service is oriented toward users of Codex data networking gear. However, a Motorola spokeswoman said the service will also be capable of monitoring Cisco Systems, Inc. routers.

## Focus on four

Motorola is targeting its network monitoring services at four vertical industries: financial services, manufacturing, retail and automotive.

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Cisco Systems, Inc. routers.

"I commend them for not saying they'll go out and support anyone's products anywhere, and that they'd rather support individual customer sites based on the customer's specific needs," said Mike Melenovski, director of services industry research at International Data Corp. in Framingham, Mass. But, he noted, "the more they get down into specific LANs, the more expertise they'll have to have on specific vendors' equipment and how it operates."

However, "there is a fundamental difference between maintaining a customer's network and managing it," said Jeff Kaplan, a director at Dataquest, Inc.'s Worldwide Services Group in Framingham, Mass. "I'd be willing to bet that Motorola has only a limited number of people on staff with the kinds of skills necessary for providing multivendor management support and taking a comprehensive view of customers' networks, so they've got a tough nut to crack."

The retail chain telecommunications manager commented that while Motorola excels at taking corrective action to resolve problems with network services and equipment, "they need to understand your core business too, and our core business is retail sales, not networks." The Motorola spokeswoman responded that the company does understand the key vertical industries it targets, one of which is retail.

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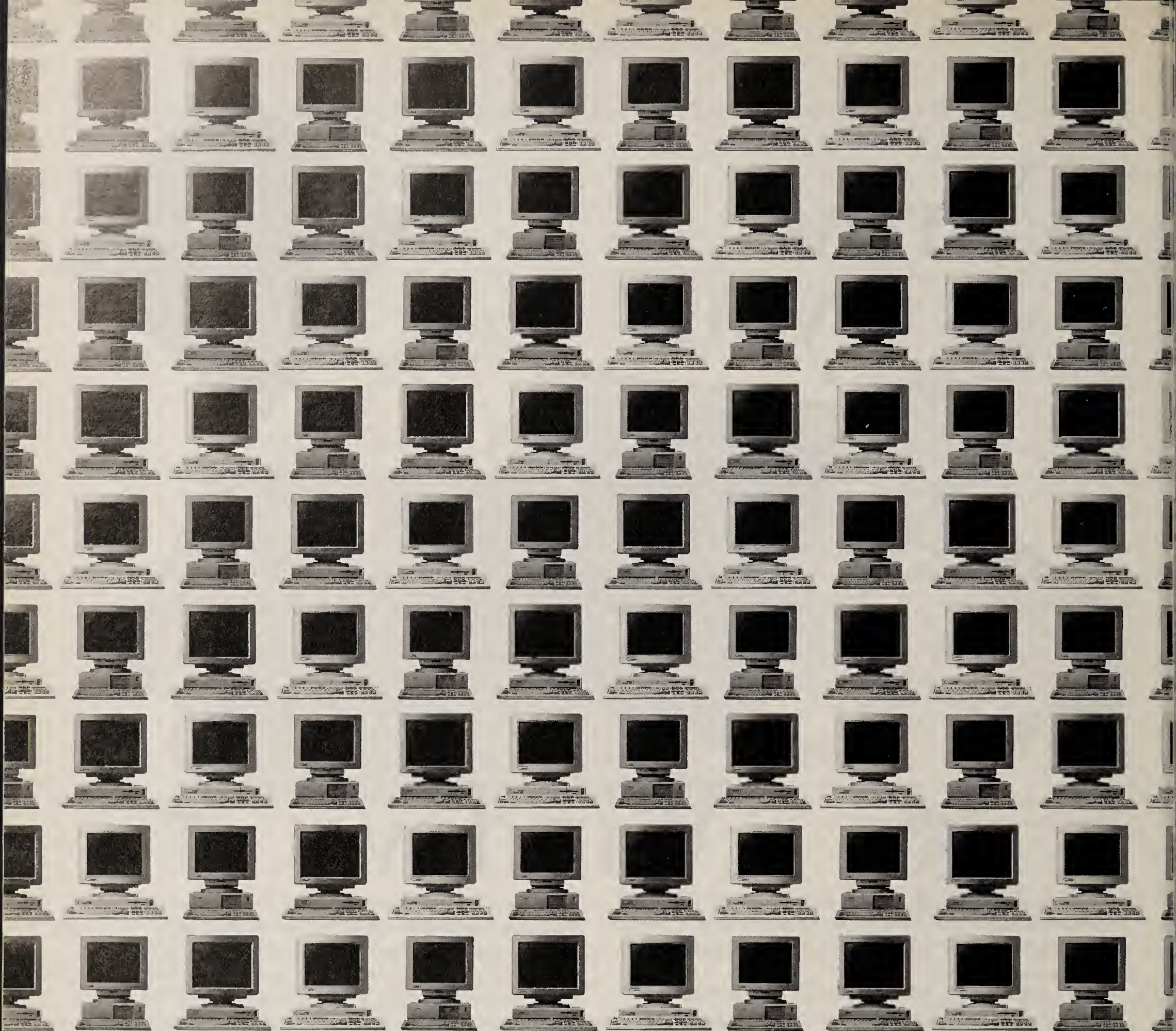
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# Internet facts, finds, figures and falsities

A semiregular column with items of interest and amusement from the Internet.

Two August news stories reached conflicting conclusions about the size of the Internet. *The Washington Post*, quoting the latest quarterly "Internet Walk" survey by Network Wizards, a Menlo Park, Calif., networking products company, said there are more than 3.2 million computer hosts. This is an increase of 1 million hosts from January. But *The New York Times* quoted John S. Quarterman, an Internet demographer in Austin, Texas, who said the oft-quoted figure of "20 million to 30 million" users worldwide may be many times too high. Quarterman takes issue with the assumption that each "host" connection to the 'net represents 10 users.

\*\*\*\*\*

For future stories, both newspapers should subscribe to "The Internet Index," a fascinating list of facts and figures from the 'net. In the Aug. 2 installment, we learned there were 14,726 registered companies on the Internet in April, 15 trillion bytes passed on the National Science Foundation's network backbone in June, and that O.J. Simpson's toll-free hot line received 250,000 calls in one week, compared with the 340,000 accesses in one week to one of NASA's Comet Shoemaker-Levy 9 servers. Subscribe to "The Internet Index" by sending a message saying "subscribe internet-index" in the body to [internet-index-request@openmarket.com](mailto:internet-index-request@openmarket.com).

\*\*\*\*\*

All those comet lovers will be happy to learn that NASA plans to make its huge databases of Earth and space images available to the public via the Internet. BDM Federal, Inc. in McLean, Va., won a \$12.8 million contract to establish the Remote Sensing Public Access Center in Fairmont, W. Va.

For a more Earth-centric view of things, look at Environ-Link, billed as the world's largest environmental information archive. The URL is: <http://environlink.org>.

\*\*\*\*\*

While star and Earth maps are just a sample of what's accessible on the 'net, much of the information is, well, unstructured. Thankfully, some Internet-based publications have actually been edited for clarity and quality. The Directory of Electronic Journals and Newsletters, compiled by the Association of Research Libraries in Washington, has more than 440 listings. Point your Gopher at [arl.eni.org](http://arl.eni.org).

\*\*\*\*\*

Newsletters are fun, but next to personal ads everyone enjoys browsing the want ads. Computer scientists and electrical and electronics engineers looking for jobs can now tap an Internet service set up by the Institute of Electrical and Electronics Engineers, Inc. For a fee of \$10 to \$15 per listing, employers can post job openings to any of seven regional "autoresponse" files. To gain access, job seekers send E-mail to a designated Internet address; replies are returned automatically to their E-mail addresses. For information, send E-mail to William Anderson at [w.anderson@ieee.org](mailto:w.anderson@ieee.org).

\*\*\*\*\*

Speaking of commerce, Vice President Al Gore unveiled a new World-Wide Web Mosaic server at his office of the National Performance Review in Washington. It provides a service, called FinaneeNet, that will allow financial managers at all levels of government worldwide to share "ideas, successes, news, lessons learned, best practices and experiences." For information, send E-mail to [preston.rich@nsf.gov](mailto:preston.rich@nsf.gov).

\*\*\*\*\*

Finally, a quick note of thanks to those readers — you know who you are — who have taken time to E-mail us with news, views and questions about items published in this space. Please keep us posted by contacting us electronically at [ellis@cw.com](mailto:ellis@cw.com). — *Ellis Booker and Mitch Betts*



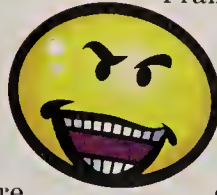
## VirusScan

CONTINUED FROM PAGE 53

and more frequent updates of the virus inventory because the software does not have to be compiled and tested each time.

The company also combined into one package the previously separate virus scanning software and the virus removal software called Clean. Both now access the common external virus data file.

Brent Frampton, a computer security specialist at the Energy Information Administration in Washington, said the better performance will be welcomed by the

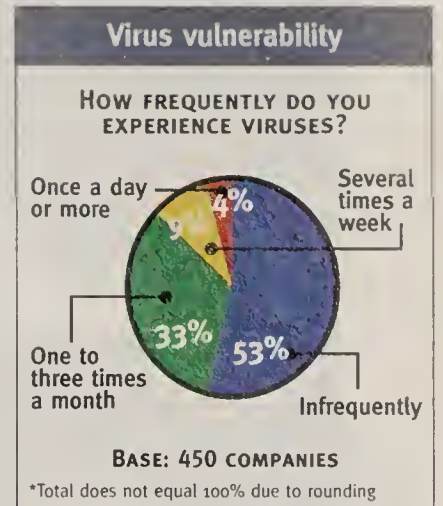


agency's 1,000 VirusScan users who run the software every day when they boot up. In a test, it scanned 488 files in just over a minute, while the older version took 6½ minutes, he said.

### A simpler life

Frampton said the reduced memory requirements would be welcomed by "power users with lots of programs running at the same time." He also said the ability to update the virus data file without changing software would simplify his life as administrator.

According to Talsky, next year McAfee will introduce its Command and Control Server, software for centralized reporting, software updating, scan schedul-



ing and identification of unprotected workstations. This software could provide the foundation for an enterprisewide virus alert system, he said.

## In search of viruses

There are about a dozen underground bulletin boards in the U.S. used for the distribution of viruses, according to Robert Bales, executive director of the National Computer Security Association (NCSA) in Carlisle, Pa.

Run by the hacker underground, they are generally not easy to find, and they usually require users to upload a virus contribution before they can download one.

This poses an ethical dilemma for NCSA and security product vendors such as McAfee Associates that need to know the details of new viruses to protect against them. "If the price of



**NCSA's Robert Bales** says if you have to contribute a virus to gain access to another virus, that price is too high to pay

access is to contribute viruses, that is too high a price to pay," Bales said.

McAfee product manager Phil Talsky said the company does not access the bulletin boards and will not buy a commercially available CD-ROM containing a huge number of viruses. "We don't want to encourage it," he said.

Instead, McAfee relies on a network of 62 agents worldwide to send it new viruses. "Also, virus writers anonymously upload them to our bulletin board," he said. "They say, 'Hey, look what I found. What do you think? You should include it in your software.'" — *Gary H. Anthes*

## Disknet makes scans routine

CONTINUED FROM PAGE 53

When Disknet is first installed, it checks all executable files, including the .EXE, .COM and .BAT files. It checks those files because only code that can execute can act on other files to, say, destroy them.

Disknet then makes a small modification to the disk's "boot record" — the first area on the disk that the computer reads — and inserts a sequential number that only Disknet sees.

Next, Disknet inserts a few lines of code into DOS' COM-MAND.COM file, a core piece of the operating system that must be present for the computer to run.

After that, every time the com-

puter boots up, the first thing it does is load a very small terminate-and-stay resident (TSR) program, about 5K bytes, into memory.

The TSR program automatically checks any disk to see if it already has a Disknet number embedded in its boot record, which indicates that the disk has been scanned for viruses.

**When Disknet finds a virus, it locks the drive until the virus or the infected disk is removed. The program also provides virus-removal features.**

If the disk has a number, Disknet allows the disk to be accessed. But if it does not, the program will not let the disk be read until it is scanned.

When the program finds a virus, it locks the drive until the virus or the infected disk is removed. Disknet provides virus-removal features as well.

If someone tries to bypass the scan by removing the TSR, Disknet

defeats this. If the TSR is not running, the code inserted in COM-MAND.COM keeps the PC from booting.

Disknet can also be set up to check machines as users log on to the network.

"If the machine is not clean, it will not allow it to log on to the network," Prindle said. Disknet is fairly speedy as well, taking about 10 seconds to check a 200M-byte disk, he added.

### No more problems

Since Prindle began using Disknet, he said problems with viruses have virtually disappeared.

Disknet is not the only antiviral product that uses this scheme, but it reflects a growing trend that bodes well for users, Campbell said.

"I think that's got to be the wave of the future," Campbell said. This will become even more important as the world moves "more toward the virtual corporation and ties in to the Internet."







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**MOTOROLA**



## New Products

**American Hytech Corp.** has announced NetGuru Manager, a network design and administrative tool.

NetGuru Manager lets network administrators design, document and manage a LAN using a graphical user interface, the Pittsburgh company said.

The product validates the network design based on standards with an internal rule-checking knowledge base invoked by the user. Supported networking palattes include Ethernet, Token Ring, Arcnet and internetworking to connect multiple networks.

Users can include all functional components of the network from interface cards and transceivers to routers and cable types. Double-clicking on a component calls up its technical aspects.

NetGuru Manager costs \$495.

► **American Hytech**  
(412) 826-3333

**BPSI** has announced the MobilEra Radio for Unix, software that provides two-way, wireless client/server communications between a Unix system and a wide variety of mobile devices.

According to the Westmont, Ill., company, MobilEra Radio for Unix passes information received from mobile devices to applications residing on a Unix server.

Features include multiple host connections, multiple concurrent connections, message prioritization and transport protocol for large message segmentation and missing/duplicate package resolution.

Prices range from \$7,000 to \$50,000, depending on the number of users.

► **BPSI**  
(708) 323-9292

**Avalan Technology, Inc.** has announced Remotely Possible/Sockets, a remote control, file transfer and chat software package.

According to the Holliston, Mass., company, Remotely Possible/Sockets lets PC users access TCP/IP over a variety of vendors' TCP/IP products. It provides communication across computers, interconnected networks and operating systems.

Users can take control of any PC on the network regardless of the type of network or video display and resolution.

Remotely Possible/Sockets costs \$298.

► **Avalan Technology**  
(508) 429-6482

**ADM Group** has announced QuickFlash, a Windows-based network messaging system.

According to the New York firm, QuickFlash lets users send and receive messages without leaving an application and without complicated access procedures. Users click on the QuickFlash icon, type the message and send it.

The product supports text messages, any size screen capture, graphics drawings and printing. Similar to an answer-

ing machine, it also lets users leave a message when they are away from their desk.

Prices range from \$249 to \$399.

► **ADM Group**  
(212) 750-7400

**CE Software, Inc.** has announced QuickMail 3.0, electronic-mail software for Macintoshes and PCs.

According to the West Des Moines, Iowa, firm, QuickMail 3.0 provides a com-

plete set of mail management capabilities including rules, searches and spell-check features.

The product lets users specify how they want their messages handled based on sender, recipient, subject, priority, date or information in the body of the message.

QuickMail 3.0 costs \$649 for a 10-user pack.

► **CE Software**  
(515) 221-1801

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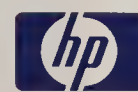
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## Platinum ships Integrator

Following several delays, the firm releases its mainframe screen scraper

By Craig Stedman

End users are not the only ones finding the road to client/server marked with potholes. Software vendors looking to escape their reliance on proprietary systems are also prone to a few flat tires along the way. Take Platinum Technology, Inc., for example.

Platinum first showed off prototypes of its Integrator product for accessing mainframe data from PCs in late 1992. Now more than 18 months later, after several schedule changes and performance problems in a beta version, it has finally released Integrator for commercial deliveries.

### A new beginning

And the potholes may indeed be a thing of the past. Integrator, a piece of middleware that functions as a kind of advanced mainframe screen scraper, is getting generally positive reviews. Early users and analysts are finding that the beta code has been reworked, and it is no longer such a processor hog.



DAVE MARSHALL

Like screen scrapers from vendors such as Easel Corp. and KnowledgeWare, Inc., Integrator gives PC users access to mainframe data without forcing them to run in 3270 terminal emulation mode. Yet Integrator can get information from multiple databases or files with a single SQL call, while typical screen scrapers are limited to accessing multiple data sources on a one-by-one basis that requires a chain of commands, analysts said.

Gene Gelpke, a group vice president and area development manager at SunTrust Service Corp., the information technology arm of SunTrust Banks, Inc. in Atlanta, said Integrator initially ate up about 200 times more mainframe CPU cycles than rival products that SunTrust was evaluating for a branch automation application. Even so, responses took "several seconds or more," he added.

SunTrust was "close to bailing out of the beta" last spring because of Integrator's performance shortcomings, Gelpke said. But then Platinum delivered a streamlined batch of code in early June that reduced Integrator's CPU use by 96% and cut response times by 81% — enough to make it a

Platinum, page 68

### Commentary

Frank Monteleone

## Middleware casino



Middleware always makes me think of Las Vegas. Perhaps it's because at Comdex/Fall '93 that was the message delivered by many of the software vendors I visited. But Las Vegas itself and middleware have a lot in common.

In Las Vegas, you must pass through a casino to get wherever you're going. Whether you're going to the hotel front desk or the bathroom there's sure to be a casino between you and your destination. The reason is simple — casinos are where the money is. In fact, casinos are the city's raison d'être in the vast wasteland of Nevada.

Information, or access to it, is our (information systems') reason to exist in our organizations (or wastelands, as the case may be). Information attains its true value only when it can be accessed by the right person, at the right

Monteleone, page 64

## Emprise, New Era expand their storage management

By Mary Brandel

Storage management is fast becoming a top concern for many information systems managers. And not surprisingly, mainframe-based storage and systems management companies are racing to add features they say these managers want most.

The following are cases in point:

- Emprise Technologies, Inc. hooked up with Avail Systems Corp. recently, adding another Novell, Inc. NetWare-compatible hierarchical storage manager (HSM) to its enterprise management system.
- New Era Systems Services Ltd. added four new clients to the list of environments that its IBM MVS-based Harbor system will back up.

"In terms of supporting popular platforms, New Era is one of the leaders," said Glen McDermed, an analyst at Gartner Group, Inc. in Stamford, Conn.

Most notable is New Era's announced support for Microsoft Corp.'s Windows NT, due out in the fourth quarter. New Era is now one of the few mainframe-level

systems that back up that environment.

The company also sped up its NetWare implementation by creating a NetWare Loadable Module (NLM) version. Previously, users had to back up NetWare via an attached workstation.

"The NetWare NLM is a throughput enhancement for them," said Mark Friedman, president of Demand Technologies, a consulting firm in Naples, Fla. Without the NLM, the product is "unusually slow," he said.

New Era said the NLM version doubles or triples throughput over its current NetWare version, boosting speed from 4M to 10M or 12M bytes per minute on a 33-MHz 486 server.

Doubling the performance would bring Harbor up to speed with one of its competitors, according to tests performed by American Family Life Assurance Co. (AFLAC) in Columbia, Ga.

Systems manager Phil Bone evaluated the non-NLM version of Harbor for NetWare on an OS/2 machine and achieved throughput of 3M bytes per minute. In comparison, Emprise's Stage3 achieved

7M to 8M bytes per minute.

But what Harbor lacks in performance it makes up for in technique. Because it does a full backup only once — and incremental backups thereafter — overall backup time is minimal, Bone said.

### Importance of HSM

The addition of Avail's NetSpace HSM to Stage3, on the other hand, does not necessarily meet an immediate need for NetWare users.

The promise of HSM is that it will move less-used data from disk storage to lower-cost secondary platforms and still keep it accessible.

"We have a system now that desperately needs [HSM], but everything I read says it's in the early stages," Bone said.

One of the AFLAC teams, whose members work on a pen-based application, keeps three months' worth of data available on a server, Bone explained. "If we could put in HSM and migrate the data to optical but still keep it on-line, we wouldn't have to put a huge server out there for them."

Instead, Bone is planning to replace the team's 2G-byte NetWare server with a 10G-byte box.

Next year may mark the time when "people will step up to HSM on NetWare," McDermed said. Today, it is less expensive and easier for most LAN administrators to just add more disk than to manage their existing storage, he added.

By next year, however, redundant arrays of inexpensive disks (RAID) will become the dominant technology for servers, McDermed said. "You're talking about adding lots of dollars for the next increment of RAID."

If HSM is accepted, Emprise's system does have the advantage of combining storage migration with backup instead of having two separate systems. "It makes sense to me to have them work together," Bone said.

"You don't want to migrate something until it's backed up somewhere," Friedman agreed. In addition, Avail's NetStor can take advantage of the resources that exist in the MVS environment.

"A big limitation of Avail NetStor is you had to build a very robust network environment with optical, tape and a large amount of disk drives," Friedman said. "In MVS, the operations and the automation are already there."

### More platforms

New Era will add support for Macintosh, Banyan Systems, Inc.'s Vines and Microsoft Corp.'s Windows NT clients in the fourth quarter. Direct support for Novell, Inc.'s NetWare is available now via a NetWare Loadable Module implementation.

### New HSM

Emprise's Stage3 will integrate Avail's NetSpace HSM software within the next 12 months.





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# D&B apps will support Oracle's DBMS

By Rosemary Cafasso

■ **Dun & Bradstreet Software last week finally made official what many users have long been hoping for: It will support Oracle Corp.'s database management system in its client/server applications.**

"It's good news because it fits more into our strategic architecture, which from a database standpoint is Oracle," said Bob Marthinsen, a program manager of information technology planning and strategies at Alcatel Network Systems, Inc. in Richardson, Texas. "We were willing to go with Sybase initially," Marthinsen said of a recent installation of D&B Software's SmartStream Budget application, "but we wouldn't have gone further without Oracle."

Some users may be disappointed with the time frame. While D&B officials could not provide availability dates, sources close to the firm said it will likely be late next year before initial applications roll out. An Oracle spokeswoman also said she understood the companies had discussed a 12- to 24-month time frame for delivery.

"It's disappointing that they are only going to testing now," said Claire Gillan, director of applications research at International Data Corp. in Framingham, Mass. "In reality, it's late. But it's better than not doing it at all."

While most client/server application providers either support multiple DBMSs or long ago stated specific plans to do so, D&B has remained committed to the Sybase, Inc. DBMS. It had publicly stated that it would eventually support multiple databases but would not specify which ones.

"This is obviously an important step," said John Mann, a senior analyst at The Yankee Group in Boston. "You can't be with just one database. You cut your market chances."

## Also in the works

The company announced a joint effort with Oracle last week that goes beyond just a routine software port. The two companies will work together on a benchmarking project to tailor D&B's SmartStream software to the Oracle platform. The project is scheduled to take five months, and at that time, D&B should be ready to announce target shipment dates, said Robert Cawly, senior vice president of customer solutions at D&B.

Oracle said the SmartStream project is important enough that it is sharing costs with D&B, although it declined to provide specifics. The company spokeswoman said Oracle sees a benefit in working with D&B even though the firms compete on the applications front be-

cause it is a chance for both parties to expand market share.

The twist in last week's announcement was a statement from both companies that the partnership could lead to other joint marketing efforts. Company officials were sketchy on details, but industry analysts said Oracle could eventually remarket D&B's SmartStream Decision Support Software. Oracle, which currently does not have a decision-support product in its client/server line-up, said it is evaluating the option of reselling the SmartStream tool but has not made a final decision.

With its Oracle plans, D&B stands to please plenty of customers — nearly 40% have the DBMS installed, Cawly said. While he stopped short of saying D&B had lost business because of its lack of Oracle support, he did say the company had "not been able to respond to all opportunities."

United Grain Growers Ltd. in Winnipeg, Manitoba, is a D&B FinancialStream user and a Sybase shop. However, the company said it sees a benefit in D&B's plans for Oracle as well.

"It would make more sense," said Keith Minaker, corporate comptroller at United Grain. "With more people on SmartStream, there's a bigger body of people to talk to."



## New Products

**Plasmon Data Systems, Inc.** has announced the Multi II/III series of multi-function optical disc jukeboxes.

According to the Milpitas, Calif., company, the Multi II/III series provides storage capacities ranging from 119G bytes to 270G bytes. Average disc exchange times range from 1.8 seconds to 2.5 seconds.

Multifunction capabilities let users download daily documents from the host system, sort data into long-term and short-term value then store all of the data on-line.

Prices start at \$33,900, depending on the number of drives configured.

► **Plasmon Data Systems**  
(408) 956-9400

**Baber Information Services, Inc.** has announced Compactor, disk compression software for the IBM AS/400.

According to the Irving, Texas, firm, Compactor uses a data compression algorithm to eliminate unnecessary waste of disk space occupied by relatively static data files.

Compactor reduces storage occupied by source and text files by up to 75% and keeps all production sources in one compressed source file.

Prices range from \$600 to \$1,650.  
► **Baber Information Services**  
(214) 650-0506

**Imperial Technology, Inc.** has introduced MegaCache, a high-capacity, multidisk caching system.

According to the El Segundo, Calif., company, MegaCache is an in-line, string-level cache system that is transparent to the host system. It provides a central capacity cache for the entire string of disk drives.

The product features a 0.1 msec access time for both cached read and write operations, simultaneous hot data block storage of up to seven SCSI disks and an internal disk and battery backup system. It can be configured to cache read only or read and write operations.

Prices start at \$18,000.

► **Imperial Technology**  
(310) 536-0018

**Industri-Matematik, Inc.** has announced System ESS 3.3, Unix-based logistics management software.

According to the Tarrytown, N.Y., company, System ESS 3.3 lets manufacturers create customer-centric logistics systems for managing complex orders and integrates control from order processing, logistics and customer service operations.

The product includes enhanced support for managing promotions and special price agreements, order templates and expanded product allocation and customer and product capabilities.

Prices start at \$500,000 for 128 users.

► **Industri-Matematik**  
(914) 631-2700

**Freedman Sharp and Associates, Inc.** has announced PowerBroker, a Unix network security product.

According to the Calgary, Alberta, company, PowerBroker gives administrators full control over what operations users can run on the root account and creates a log of programs running as root.

Administrators can assign specific systems management duties to other users. PowerBroker's network traffic can be encrypted to prevent access to sensitive information.

PowerBroker costs \$9,000 for a typical 30-host configuration.

► **Freedman Sharp**  
(403) 264-4822

**Muller Media Conversions, Inc.** has announced Fast 'n Easy Extended Edition, data conversion software.

According to the New York company, Fast 'n Easy Extended Edition frees data from Wang Laboratories, Inc. and other legacy tape data systems and converts the data on demand, allowing tapes of archival data to be copied in a presentation format.

The product builds a catalog of all preserved documents, provides a Windows application to locate the documents and includes a conversion server application to monitor requests for conversion.

Prices range from \$5,000 to \$19,500.

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# Mainframes cash in on voice-messaging services

By Thomas Hoffman

Over the past two years, 200,000 New England residents have decided to replace their clunky, tape-eating personal answering machines with a more convenient medium: a Unisys Corp. A series mainframe.

Nynex Corp. adopted this computing platform when it first began offering voice-messaging services to eastern Massachusetts residents in May 1992. Since then, the company has extended uniform voice-messaging services based on Unisys' Network Applications Platform (NAP) to customers in Rhode Island, western Massachusetts, New Hampshire, Vermont and Maine.

## Phone services

In 1988, federal regulations were passed that allowed the regional Bell operating companies (RBOC) to offer voice-messaging services within defined territories. Nynex's New England territory extends from Rhode Island to Maine.

"We felt it was important to have instructions on the system that were easy to understand and prompts that were

consumer-friendly," said Sam Cannavo, director of product marketing at Nynex's consumer markets division in Boston. After voice messaging grew to 50,000 customers in the Greater Boston area in its first six months, Nynex expanded the service to other regional locations using Unisys' NAP.

At first glance, carrier-provided voice messaging hardly seems worth the \$5.95 to \$12 monthly price tag. But it has become a booming business for RBOCs. Consumers and small-business owners are increasingly demanding continuous services that are not affected by power outages and temperamental answering machines.

Last year, the U.S. voice-messaging market grew 17%, to \$1.3 billion, according to Probe Research, Inc., a telecommunications researcher in Cedar Knolls, N.J.

To date, Nynex has garnered 10% of the 2 million prospective New England cus-

tomers. Cannavo projected that Nynex's \$15 million to \$20 million in New England voice-messaging service revenue will grow by 50% in the next year as it seeks to penetrate 15% to 20% of the market.

That type of growth is expected to continue, as new services proliferate and interactive voice and data networks continue to converge. "If you have voice mail at work, it's hard to go back to an answering machine at home," said Nancy Jamison, a senior telecommunications analyst at Dataquest, Inc. in San Jose, Calif.



Nynex's Sam Cannavo says his company chose the Unisys A series platform for its reliability

## Mainframe rollout

After installing its first Unisys A16 mainframe in Cambridge, Mass., to serve the eastern part of the Bay State, Nynex has since rolled out Unisys A11 machines in each of its other territories. To help cover its burgeoning Boston area market, Nynex is planning to add another Unisys A16 hub by year's end, Cannavo said.

# Changing mainframe role leads to joint venture

By Computerwoche staff  
MUNICH

■ As users move to client/server information systems, companies are coming up with innovative ways to use freed-up mainframe capacity.

For example, Sued-Data GmbH, a data processing subsidiary of German publishing house Sueddeutscher Verlag, has some newfound mainframe capacity that has led to a joint venture with IBM Systems and Networks GmbH. This joint venture will assume responsibility for all computer center activities for the production of the German daily newspaper *Sueddeutsche Zeitung*.

## Going client/server

According to a joint statement by the partners, the venture became necessary because Sued-Data wants to replace mainframes with client/server systems.

The new company — of which Sued-Data owns 25.1% and IBM owns 74.9% — has been trading since July 1 under the name Informationssysteme und Dienstleistungs GmbH (Information Systems and Services, or ISD).

The founders want the company to handle the entire infrastructure of Sued-Data's MVS computer center, the operat-

ing system programming and work scheduling.

The networks and the development of publishing applications will remain the responsibility of the publisher's subsidiary. The entire 24-member staff of the MVS computer center has been taken over by ISD.

## Mainframe support

Sued-Data is providing ISD with the IBM 9121 mainframe it has been leasing — a Model 570 with 60 MIPS and a 270G-byte disk capacity. This mainframe is currently running individual programs such as subscription administration, customer accounts for advertising and retail and dispatch management. Various modules of SAP AG's R/2 software are being used for administrative tasks. In the future, these will also be handled by the new company.

"Once the mainframe has been written off, we'll start thinking about switching to client/server systems," said Karlheinz Winkelmann, an IBM official. In the course of this rightsizing, the joint venture can then run other computer systems on behalf of Sued-Data.

*Computerwoche* is an IDG Germany publication.



# Monteleone

CONTINUED FROM PAGE 61

time and in a usable presentation. Information technology is the casino we must pass through to get it.

Our casinos used to be big gaudy glass houses. We dazzled the poor rubes into forking over their money at such games of chance as SNA roulette, batch Windows baccarat or the 3270 slot machines. Then, with the advent of distributed computing, things started to change.

First, minicomputers allowed departmental solutions. But the worst was the combination of PCs and client/server computing. Suddenly, these users didn't need our casinos anymore. They could do this at their desktops. They thought their PCs could go right to the source and get the information they needed, bypassing our games of chance.

This was unacceptable. It had to be stopped. But how? Never fear. The computer industry came to our rescue. From an industry renowned for the creation of solutions in search of problems came middleware. The middle of what? Is it the middle between the top and the bottom, the left and the right, the good or the bad, cheap or expensive? Perhaps it's between the beginning and the end.

Do we long so much for the control once institutionalized in our data centers that we have to recreate it in the new client/server paradigm we're all trying to figure out? Some software that goes under the name middleware is useful to facilitate the implementation of distributed computing. However, a little middleware is good, but a lot is bad. And if it is allowed to grow, it may take us back to

the glass-house casino days.

When I hear that "extensive middleware" is the new defining theme for information technology architecture in the '90s, I hear the chink of the slot machines. When I see vendor graphics depicting middleware as the largest, most important component of information technology, I picture Bally's and Caesar's Palace. It's that casino mentality again. Let's not fall into that trap.

Open computing promised far better interoperability, without creating a new branch of the software industry. It's client/server computing not client/middleware/server computing that is driving business transformation. Adding heaps of complexity to distributed computing is part of our heritage.

We were in love with these easinos because they were our creations. They were huge, elegant and exciting. But are they relevant to our future needs?

Except for transactions that run the business, users aren't that interested in systems, engineered software or even applications. They want their information. They want to get at it easily and have easy-to-use tools to analyze, make decisions and communicate that information to others. They want little easinos on their desktops.

Our challenge is to make this happen. We will need some middleware, no doubt. But we must hold vendors to their promise of open interoperability. Hold them to standards. We hold them to it by voting with our purchasing dollars. This may eliminate the need (cost and complexity) for much of the middleware casino.

Monteleone is strategy, planning and technology director at The NutraSweet Co. in Deerfield, Ill.



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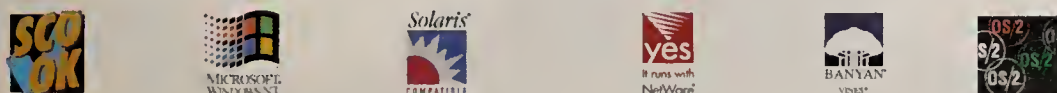


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\$6495 MSRP (1 CPU) and \$6582 ESP (1 CPU) represents base model price. \$22,100 MSRP (4 CPUs) and \$35,700 ESP (4 CPUs) represents a system configuration consisting of: 64-MB RAM, 2-GB SCSI ARRAY (4 x 540-MB HD), CD-Rom and Microsoft® Windows NT™. \*ESP (estimated street price) quoted by authorized Compaq® reseller. VAX MIPS based on Drystone 2.1.

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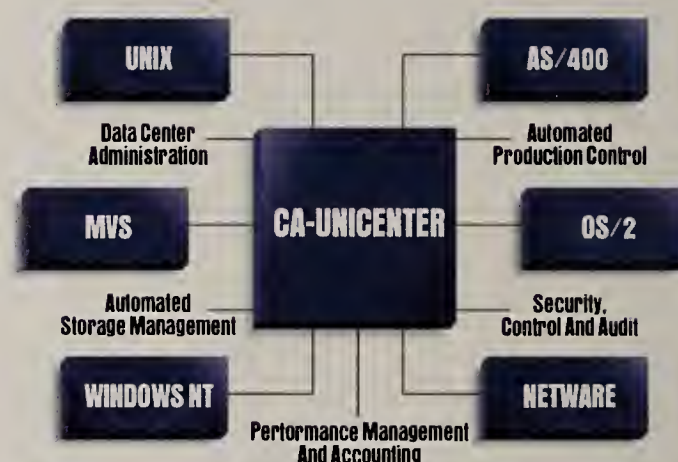


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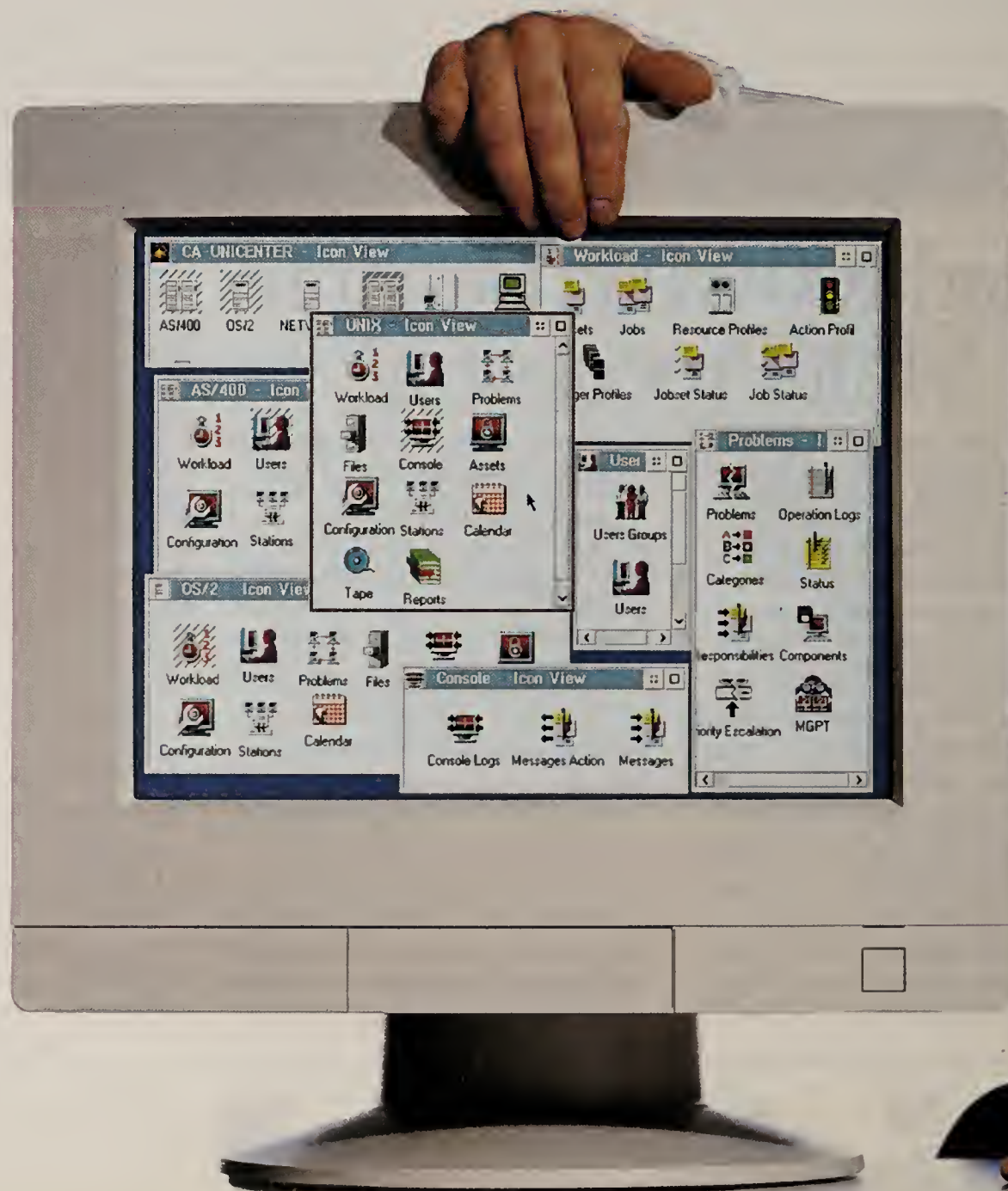
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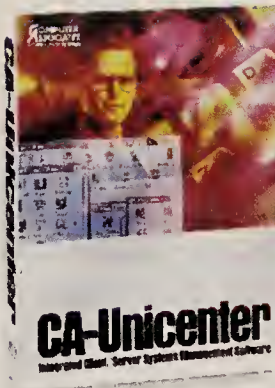
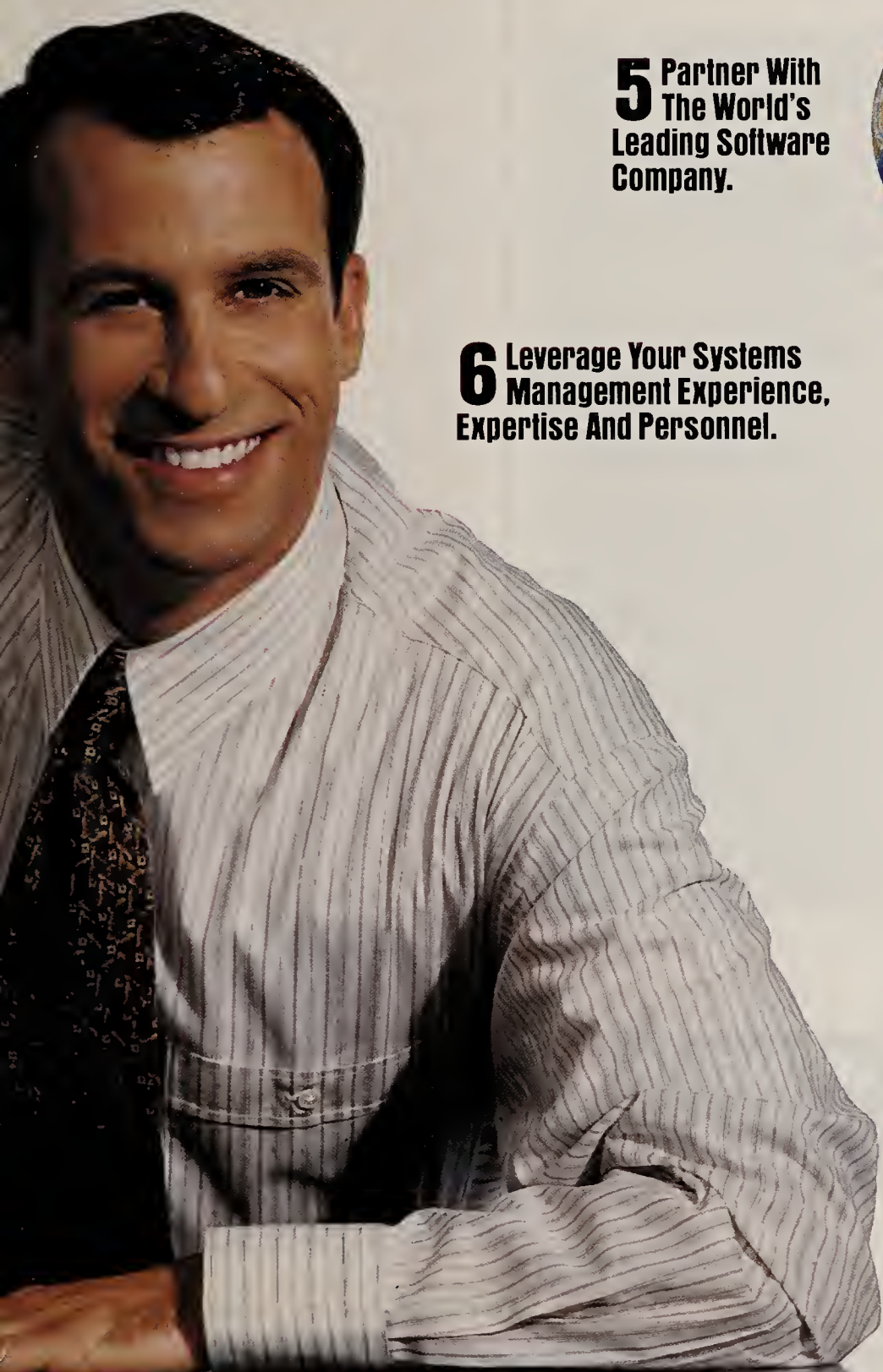


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## Platinum

CONTINUED FROM PAGE 61

useful tool.

"At this point, I don't hear much about Integrator [from users or developers], which I take as a sign that it's working," Gelpke said. "When it wasn't working, I heard a lot about it." Integrator is being used in a single branch office in Nashville

and will be expanded to about 5,000 users as the automation application rolls out in 1995, he added.

Integrator's ability to fetch data with a single SQL call should hold down network traffic and make it easier to use than other screen scrapers, Gelpke said. "We may be executing six to 10 3270 screens on the host with one call," he added. "With the other alternatives, you have to go across the network for each screen you want to scrape."

Integrator resides on the mainframe as a VTAM application that maps 3270 application screens into a "virtual database" of columns and rows. When SQL calls come in from the PC portion of the software, a navigation engine opens up the appropriate screens and a data normalization component goes through them. That translates the requested information into a SQL statement, which is then sent back to the user.

Dick Turgeon, Integrator product

manager at Platinum in Oakbrook Terrace, Ill., said the early performance problems occurred because the software was required to create a separate "navigational plan" for getting at multiple databases when it received each SQL call. Platinum rewrote the code "extensively" so that it now can store and recall the navigational plans for procedures that are repetitive in nature, he added.

Monarch Marking Systems, a subsidiary of Pitney Bowes, Inc. in Miamisburg, Ohio, was also an Integrator beta site. It plans to put the software in production this fall for its 10-member customer problem-resolution staff. Integrator is expected to speed up access to CICS and IMS data and reduce the amount of PC training users need, said Kirk Waymire, senior programmer/analyst at Monarch Marking.

However, the product can be a little difficult for mainframe programmers to grasp, Waymire added. "It's not something you can just sit right down and [program], although it has improved quite a bit from the beta release," he said. "I don't know that it's user-friendly yet."

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## Competitor

Platinum is trying to position Integrator as an alternative not only to screen scrapers but also to Information Builders, Inc.'s more sophisticated Enterprise Data Access/SQL (EDA/SQL) gateway software. While users and analysts agreed that the two products have a similar purpose, they are viewed as different animals.

Integrator "is a more advanced approach" than other screen scrapers, but it is not as robust as EDA/SQL, said Chet Geschickter, director of research at Hurwitz Consulting Group, Inc. in Watertown, Mass. EDA/SQL can handle "more complex" applications than integrator, he added.

Gene Gelpke, an Integrator customer at SunTrust Banks in Atlanta, said he also may use EDA/SQL for some applications. EDA/SQL looks most appealing for batch programs where users need direct database access. Screen scrapers such as Integrator are more suited for transaction processing, Gelpke said. — *Craig Stedman*

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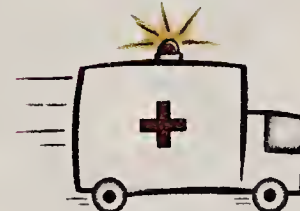
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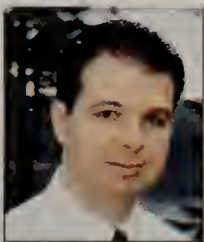
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# Information Builders



## Commentary

Ralph Soucie

OLE's  
Achilles'  
heel

Don't get me wrong. I think Microsoft's Object Linking and Embedding (OLE) 2.0 is a wonderful piece of software technology. It makes it possible to focus on the job rather than the tool, eliminates duplicate efforts and supports the creation of stunning documents and presentations. It does all of these things, just like Microsoft says.

It's just that Microsoft applications don't always implement linking satisfactorily.

Linking under OLE 2.0 allows a client application to pull in data from another application (the server application). Linking is useful when you think the data in the server application might change; it flows changes through to the client application, eliminating the need to manually enter data in more than one document. Linking offers another benefit: In many cases, it saves memory and disk space when compared with embedding.

**No safety net**

Links to Word documents, however, can be fragile. Nowadays, any data file, no matter how useless it might look, might contain data used in a destination document.

Simply moving a source file to another directory can break a link to an important Word document—a problem you won't notice until you open the Word document because breaking a link does not generate an error message. That's a nasty one because many of us have been spoiled by our experience with spreadsheets. If cell A2 references cell A6 and you delete cell A6, cell A2 returns an error value.

When you screw up in 1-2-3 or Excel, you know it immediately.

Not so with OLE 2.0 in Word. Instead of advising you of a problem, it acts like Sgt. Schultz on *Hogan's Heroes*—it knows nothing.

Try it yourself: Link a cell from an Excel document (which has been saved to disk) to a Word for Windows document, then delete the source Excel document from disk. This won't cause so much as a ripple in the Word document, which still displays the defunct Excel range in what-me-worry fashion. Now select the Excel object and update it by pressing F9. This is supposed to cause the Word client application to read the current values from the saved file, which no longer exists. Yet there's still no error message.

You can't tell that a link has been broken until you start poking around a linked object with the Edit Linked Spreadsheet Object command. Even then, you have to know what to look for. This smart-looking document turns out to be mentally defective.

**A ticking bomb**

This means Martha can start drafting a memo to top management, including cost figures that are linked to George's Excel worksheet. Later, George can decide to revamp his directory structure and move the source file to another directory, breaking the link. The next day, he can revise the spreadsheet without Martha knowing it, causing her to submit an erroneous memo (which looks perfectly normal to her) to the executive committee. This is an example of what I call OLE 2.0's "car bomb"—a career-crippling error packaged in an innocuous container.

When the error is uncovered, the first blood might flow in the middle-management ranks. Sooner or later, however, the spotlight will turn to the folks with the tools that can prevent this type of cross-application fiasco: the systems professionals and network administrators who control access to sensitive data.

**What to do**

Every network administrator should advise users to locate all source documents for OLE links in one or a limited number of directories where the right to delete or move files is severely restricted.

Though certainly not a fail-safe measure, such a policy, along with training measures to remind users of the risks of OLE linking, is the best safeguard against the possibility that an OLE-enabled application might promulgate errors through linked documents.

Soucie is an Excel consultant in Sullivan, Maine, and author of the upcoming book *Making Microsoft Office Work*.

## Strategic systems

Ruling opens door  
to software patentsBy Mitch Betts  
WASHINGTON

■ **No need to be shy anymore. A recent court decision gives corporations the green light to boldly seek 17-year patents for their most innovative information systems.**

In the past few years, the U.S. Patent and Trademark Office made it tougher to get patents for software-related inventions, but the landmark court case known as *In re: Alappat* is expected to firmly reverse that trend.

The July 29 ruling by the U.S. Court of Appeals for the Federal Circuit here declared that a general-purpose computer run by software can be patented because the program essentially creates a new machine [CW, Aug. 15].

**Increase expected**

By removing much of the legal uncertainty, the ruling will result in more applications for IS patents, patent experts said recently. The potential is greatest in the financial services industry, which is continually creating new, complex financial products that require software-driven systems to work.

About 14,000 software patents have been awarded, but it is not known how many are held by vendors and how many are held by user companies.

Before *Alappat*, "I had clients who decided not to file for a patent, and others have decided not to appeal a patent office rejection," said Peter K. Trzyna, an attorney at the Chicago law firm Keck, Mahin & Cate. "But now they will be back in my office [to pursue their patents], especially the financial industry," he added.

"The court said that software-related inventions are patentable. Period. End of story," Trzyna said, noting that it is doubtful the ruling will be appealed to the U.S. Supreme Court.

Despite the sometimes rough going on the patent trail, dozens of pioneering firms have already won patents for strategic information systems in hopes of locking in a competitive advantage. The most famous include Merrill Lynch &

**Locked in**

**Merrill Lynch,**  
Aug. 24, 1982  
U.S. Patent No.  
4,346,442  
Title: "Securities  
brokerage cash  
management system."

**Mrs. Fields,**  
May 5, 1992  
U.S. Patent No.  
5,111,391  
Title: "System and  
method for making  
staff schedules as a  
function of available  
resources as well as  
employee skill level,  
availability and  
priority."

**Chrysler,**  
April 26, 1994  
U.S. Patent No.  
5,307,484  
Title: "Relational  
database repository  
system for managing  
functional and physical  
data structures of  
nodes and links of  
multiple computer  
networks."

**"The  
court  
said that  
software-  
related  
inventions  
are  
patentable.  
Period.  
End of  
story."**

—Peter K.  
Trzyna,  
attorney

Co., for its computer-based Cash Management Account, and Mrs. Fields, Inc., for its ultradetailed staff scheduling system.

"There already is a flood of software patents, but the *Alappat* decision will increase the rate even more as more people realize that it can be done," said Gregory Aharonian, who runs the Internet Patent News Service in Belmont, Mass.

**Patent benefits**

The advantage of a patent is that it gives the holder 17 years of monopoly rights over the system. Competitors and even vendors have to pay royalties if they deploy a system covered by the patent or risk a lawsuit for infringement.

This April, Chrysler Corp. in Detroit won a patent for its homegrown network management data repository. The relational database scheme creates a single place to keep an inventory of all network devices and links and their attributes, said John Baker, a telecommunications specialist at Chrysler's IS organization.

Why get a patent? "Nothing on the market was as flexible as our design. We wanted to protect our unique design," Baker said. He declined to comment on whether Chrysler is licensing its technology to others, but he said some "outside parties have expressed interest."

**Pricey process**

Following the *Alappat* decision, the key to getting a patent is proving that a system is truly a "new and nonobvious" invention, not just a computerized bookkeeping system. The patent process is costly—about \$20,000 for the first application (which may be rejected)—and it takes about two years.

The increasing number of IS patents naturally leads to more litigation, too, such as the legal battle between Hallmark Cards, Inc. in Kansas City, Mo., and archival American Greetings Corp. in Cleveland. In a still-pending case, Hallmark charges that American Greetings' computer kiosks for creating custom greeting cards infringe on Hallmark's patent for a Touch Screen Greetings kiosk.



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# Easel tool draws objects, databases together

Developers applaud relational mapping capability

By Melinda-Carol Ballou

**In an attempt to bridge the object-oriented and relational database worlds, Easel Corp. in Burlington, Mass., joined other software tools vendors late last month with the release of Synchronicity 2.0.**

Earlier this year, ParcPlace Systems, Inc. and Hewlett-Packard Co. shipped tools that allow developers to map ob-

preserve those assets while taking advantage of object-oriented programming," said Adrian Bowles, president of Atelier Research, Inc., a consulting firm in Westport, Conn.

The Easel tool's focus on business objects makes it more of a "business-oriented tool" for incorporating corporate functions and processes, Bowles noted. The general trend toward the mapping of objects to RDBMSs, however, is yielding a number of options that provide devel-

opers with the necessary transitional technology, he added.

"A lot of people may end up going to object-oriented databases, but they will go through a transition phase, and this offers solid support for the transition," he said. "RDBMSs are a standard at many companies."

Synchronicity 2.0, originally dubbed "Synchro," allows developers to create business objects that incorporate actual

business processes. Those object models can be linked to RDBMSs. The mappings between the objects and the database systems are stored in an atlas.

A business object request broker generated by Synchronicity then uses the atlas to link objects and data, allowing developers to create objects independent of the data storage method, compa-

ny officials said. This means programmers will be able to create object-oriented applications that access RDBMSs more easily and efficiently and then maintain them as business needs change, they added.

Several developers briefed on Synchronicity agreed on the potential benefits.

"Being able to do relational mapping for our business objects could save us tons of time," said Don Crossley, a senior systems analyst for the state of Oregon in Salem. "We did our prototyping and had to write a lot of methods by hand [before], trying to pass objects in and out of Sybase."

## Time or tool

Mapping objects to relational databases is arduous because the models are so different. To do it efficiently, developers either need to write a lot of code or get a tool to help, said Jared Nedzel, a consultant at BSG Consulting, Inc. in New York, which is using Easel's Enfin at a major telecommunications firm.

Synchronicity offers an elegant solution that allows developers to map complex objects — or groups of objects — to multiple tables in an RDBMS, Nedzel said. It also allows them to retrieve information at multiple layers, he added.

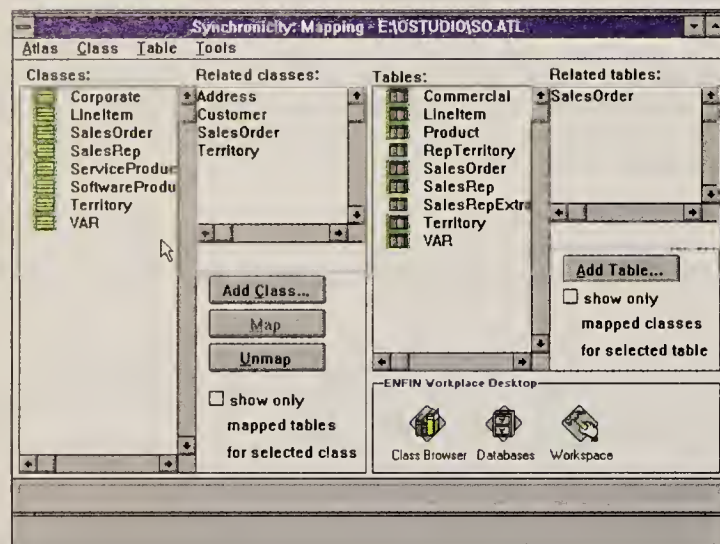
"Let's say you have a company that has 10 departments and each department has 1,000 employees. If you need to retrieve the employees for only one department, you would want to retrieve the appropriate department first, rather than searching through all 10,000 employees," he said.

The Easel product allows developers to go through "one layer at a time," which

can offer critical performance benefits, he added.

Synchronicity allows developers to model Smalltalk classes from database entities and then create objects from them. For existing object-oriented client/server applications, it will allow developers to generate a relational database schema that reflects the objects in the object model and their relationships.

Windows versions of the tool will be available this month for \$4,995. An OS/2 version will ship in November for \$6,995. Stand-alone versions of the tool for business object modeling and object mapping are also available.



Easel's Synchronicity 2.0 allows developers to create business objects that incorporate business processes

jects to relational database management systems. Other vendor such as Digital, Inc. and IBM are also addressing these sorts of issues using Smalltalk, according to industry analysts.

"All of these products that we're seeing now — such as Easel's and ParcPlace's — are trying to give people a way to effectively get to their relational data and

## In sync

Synchronicity is part of Easel's Object Studio family of object-oriented development tools and works within Easel's Enfin Smalltalk development environment.

Its features include the following:

- **A mapping tool** that generates two application components — an atlas and a business object request broker.
- The atlas captures all the mappings between an application's objects and its relational tables. The business object request broker is embedded in the application and lets objects make requests and receive responses from RDBMSs.
- **An object query builder** lets developers specify requests that represent data in terms of objects and not database tables.
- **An object cursor** lets developers move through objects individually.
- **A customized SQL editor** lets developers override a persistence object map and write their own Smalltalk code.

# Canada's oil industry reflects on move to client/server

By Ken Hanley

Canada's oil industry was an early adopter of client/server systems and graphical user interfaces (GUI). Starting in the late 1980s, Calgary, Alberta-based development groups began rolling them out in response to increased cost pressures.

Oil industry information systems shops moved to client/server and complementary GUIs, often pairing powerful Windows desktop PCs with Unix servers. Three or four years into the move, some clear lessons are emerging.

Recently, a number of senior IS people in Calgary shared their thoughts on the experience; their observations provide important lessons for firms that have yet to make the move.

• **Client/server is not much good without a GUI front end.** Although the technologies are not directly related, client/server projects in Calgary almost always incorporate GUIs — usually Windows. "Users can see direct benefits from a GUI and probably couldn't care less about the technology underneath that allows it to happen," said Colin Card, technical adviser at Gulf Canada Resources.

• **There's really not much client/server can't do.** It's been argued that certain applications are not well-suited to client/server technology. "It's not that client/serv-

er is poorly suited to these kinds of applications. It's the way we think about them," said Grace Evans, supervisor of systems development in the liquids business unit at Amoco Canada Petroleum Co. "When we say that a certain application, like general ledger for instance, won't work well on client/server, we're focusing more on the process than the results." But, she said, "If you look at the old processes in a new way, you can do almost anything by distributing work over a number of machines."

• **You don't necessarily need new people to build a client/server system, but you will need a new way of thinking.** A widely held belief postulates that people with training in the development of mainframe systems, sometimes dismissed as mainframe dinosaurs, are the wrong ones to develop client/server systems and that people with training in PC backgrounds are more likely to be effective with GUI and client/server technologies. "I can't agree," Evans said. "A combination of skill sets makes for the best project. Mainframers bring a discipline and experience set that is sadly missing in some client/server developers."

• **Sometimes, the software is not as reliable as you would like.** "In the days of 'big iron,' we used to rely on vendors to deliver clean code. Bugs were the exception," said Tom Moen, information technology supervi-

sor at Wascana Marketing, a division of Wascana Energy, Inc. Now, however, "We expect software not to work when it arrives and hope that we can find a work-around."

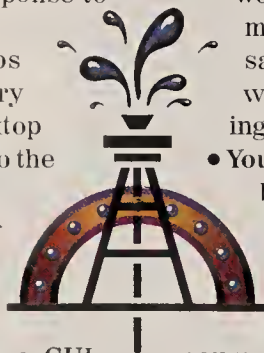
• **Few people have done it your way before.** The Calgarians advise against adopting a herd mentality when choosing a development tool set. "In this city, it seemed that everyone was stampeding to PowerBuilder. We looked a little closer and chose ObjectView," said Vikki Wellwood, project leader at Canadian Hunter Exploration.

Companies in Calgary have chosen a wide variety of tool sets. PanCanadian Petroleum Ltd. is probably the most aggressive, combining GUIs and client/server with top-to-bottom object orientation. It uses Next Computer, Inc.'s NextStep development environment on a network of PCs and Sun Microsystems, Inc. servers.

Gulf uses desktop PCs and Sun servers, couples them with a Novell, Inc. network and builds in C and Paradox.

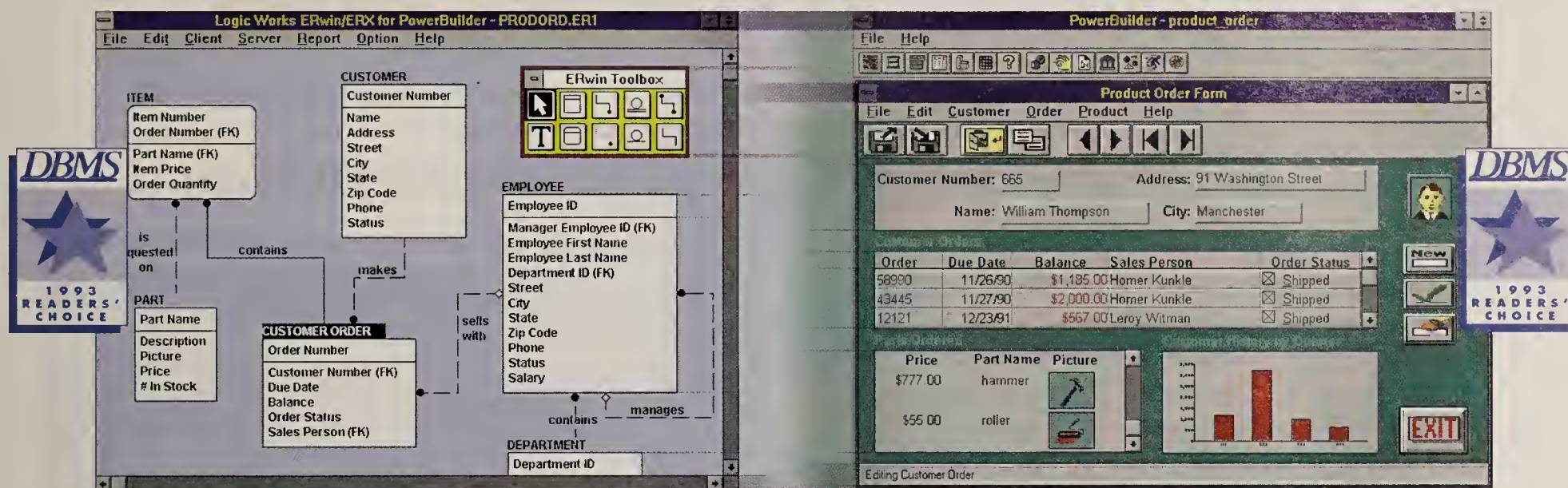
Despite the different tools these people work with, all agreed that the move to client/server and GUIs was well worth the effort. Card spoke for the group when he said: "With a flexible plan, patience and a lot of hard work, you can begin to recognize the promise that computing has held, and rarely delivered on, for over a decade."

This article was excerpted from InfoCanada, an IDG publication.





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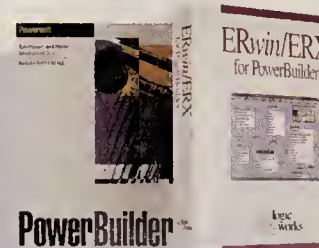
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# Two Strategies for Client/Server Applications Development

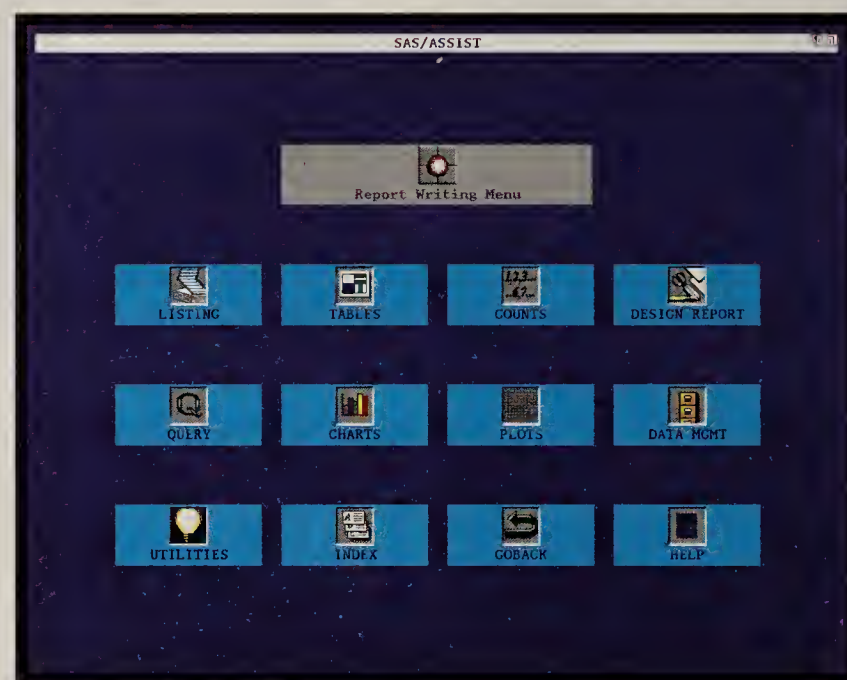
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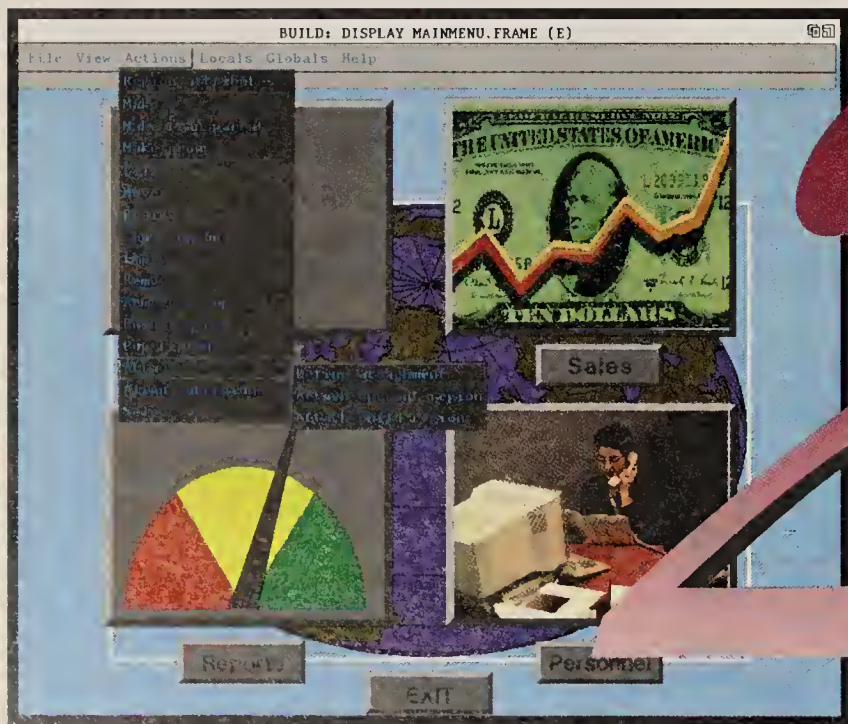
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## New Products

**Versant Object Technology** has introduced C++ Application Toolset 3.0, development tools that use Versant's object database management system.

According to the Menlo Park, Calif., company, C++ Application Toolset 3.0 provides additional reporting capabilities and improvements for building graphical user interfaces.

The product is made up of three modules: Object SQL for object manipulation and analysis of object databases, Screen for building graphical applications and Report for customized reporting.

The product costs \$600 per seat.

► **Versant Object Technology**  
(415) 329-7500

**Cray Research, Inc.** has announced the Cray Fortran 90 (CF90) Programming Environment.

According to the Eagan, Minn., company, the CF90 Programming Environment includes automatic parallelization and advanced scalar optimization, improved code performance and debuggers to edit Fortran 90 source code.

The CF90 Programming Environment is available on Sun Microsystems, Inc.'s SPARC systems running the Solaris 2.3 operating environment.

Prices start at \$1,295.

► **Cray Research**  
(612) 683-7100

**Visual Numerics, Inc.** has announced the IMSL Fortran 90 MP Library.

According to the Houston company, the IMSL Fortran 90 MP Library is a collection of user-callable mathematical and statistical subroutines for use in scientific and industrial applications.

The product was designed to operate with Cray Research, Inc.'s CF90 Programming Environment.

It is priced at \$7,100.

► **Visual Numerics**  
(713) 784-3131

**Talarian Corp.** has announced RTWorks 3.0, a family of software tools for building

client/server applications that manage time-critical data.

According to the Mountain View, Calif., firm, RTWorks 3.0 includes enhanced message-passing and rule-based technology that lets users incorporate middleware functionality into applications.

Features include open architecture for integration with legacy and third-party software, a dynamic graphical user interface (GUI) for building GUIs without writing code and message-oriented mid-

dleware that distributes information throughout an application.

Prices start at \$8,000.

► **Talarian**  
(415) 965-8050

**Interlink Computer Services, Inc.** has announced CICS Programmers Toolkit Version 2.

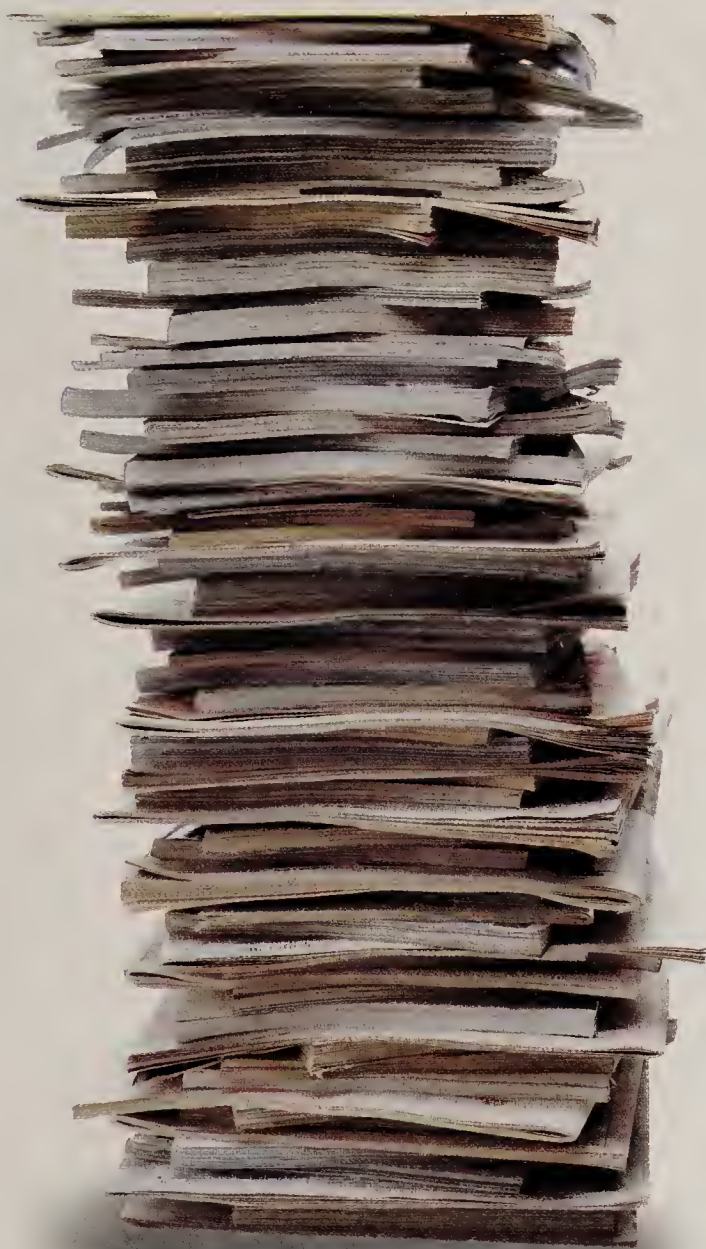
According to the Fremont, Calif., company, CICS Programmers Toolkit Version 2 lets users design applications that ex-

change data between mainframe CICS and TCP/IP network applications.

Version 2 has a new administrative interface and more programming options with application programming interface enhancements. A record-oriented receive and send feature lets users send and receive records without buffering the characters inside the application.

Prices range from \$18,000 to \$25,000.

► **Interlink Computer Services**  
(510) 657-9800



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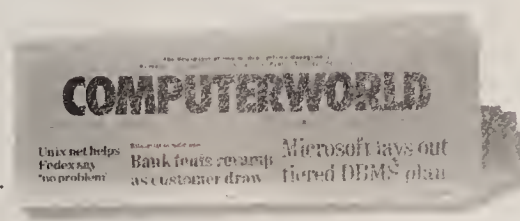
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## COMPUTERWORLD'S EIGHTH ANNUAL SALARY SURVEY

**SPECIAL  
REPORT**

Rich, poor or in the middle, many IS professionals have their pay linked to their performance, our latest report on pay trends finds. And many more wish they did.



## Cash On Delivery

By Alan R. Earls



**D**espite salary freezes, continued downsizing and only modest raises, information systems professionals still feel they should be paid what they're worth.

"I'm a results-oriented kind of guy, and I think you should be paid based on what you accomplish," says Jeff Kincaid, IS manager at Timexpress, an overnight air-delivery service subsidiary of New Creations, Inc. in Columbus, Ohio.

Kincaid is not alone. Nearly 41% of those responding to *Computerworld's* annual salary survey say their companies offer pay-for-performance compensation plans in the form of merit, department or company performance bonuses or place a portion of their salary at risk. And of those who don't have such plans, nearly half want them.

That's one of the findings in the eighth annual *Computerworld* report on IS pay trends, a virtual feast for computer salary aficionados. Our three pages of tables (beginning on the next page) deliver the goods on 28 different IS positions in 21 industries. Readers can also compare salaries by annual corporate revenue.

This year's survey features two changes from past surveys. First, our sample includes more respondents from large corporations, a group that had been underrepresented in the past. The credit goes to the Society for Information Management, which for the first time made its membership list available.

As a result, readers will find higher average salaries for IS executives. (However, because the sample group is different, readers are advised against comparing this year's salary

figures with those of previous years.)

Second, because the same title can mean different things in different organizations, we list salaries by the functions our respondents perform, instead of the titles they hold.

That should make it easier for readers to draw accurate comparisons.

Not surprisingly, this year's results, based on responses from 908 individuals, confirm the suspicion that larger firms tend to pay more than smaller ones. Indeed, in some cases, a lateral move to a company with annual revenue of more than \$500 million can result in an average salary increase of \$10,000 or more. Some of the more surprising findings can be found scattered throughout this report.

In addition to salary data, *Computerworld* asked respondents what other benefits they receive or would like to receive.

Telecommuting was much in demand. On average, only 15% of the respondents say they currently have this option, while 41% say it is high on their wish list.

"I think this is a classic case of the cobbler's children having no shoes," says Layne

C. Bradley, a telecommuter wanna-be and vice president for information technology at Gainsco, a property and casualty insurance company in Fort Worth, Texas.

But, more than telecommuting or a desire for flex time, pay-for-performance plans seem to stir IS passions most. And unlike telecommuting, where little variation exists among industries, the differences here are striking.

For instance, in the government

sector, a mere 11% of respondents report pay increases tied directly to job, company or IS department performance. Not so in aerospace manufacturing, where the figure was 55%.

Kincaid, along with a hefty 68% of the transportation industry, is one of the performance bonus

**THE SMALLER THE COMPANY, THE LARGER THE RAISE . . . Companies earning less than \$100 million were typically more generous at raise time, dishing out increases that averaged 4.8%. Companies earning more than \$500 million averaged only 3.8% raises.**

"haves." He says he is "very satisfied" with his incentive benefits. Bradley says it works fine at his company and is a big part of his own compensation.

But Beverly Lieberman, president of Halbrecht Lieberman Associates, an executive recruiter in Stamford,

Conn., says the views of senior IS management do not necessarily represent the profession as a whole [see "Does anyone know how to pay this game?" CW, Aug. 11]. IS managers often receive financial incentives not available to the IS rank and file.

Bradley acknowledges the disparity in pay-for-performance systems. At Gainsco, he says, all officers get a bonus of up to 15% based on the company meeting its financial goals. "That part is an all-or-nothing proposition," he says.

Another 15% is based on achieving personal goals. "This part of the package grades down all the way to the rank and file," he says.

But some nonmanagement survey participants said pay-for-performance is still reserved for top brass.

"Those at the [IS] director level get paid a bonus based on the level of on-line system availability, but I'm the one who gets called in the middle of the night to fix it when things break down," says John W. Caldwell, a senior database specialist at Airborne Express in Seattle. Caldwell does not receive such bonuses. ■

Earls is a free-lance writer in Franklin, Mass. Kevin Burden, *Computerworld's* senior researcher, contributed to this report.

**IF YOU CAN STAND THE WINTERS . . . CIOs at northern and mid-Atlantic companies can earn as much as 43% more than CIOs in the south central region, where pay is typically among the lowest for the IS elite.**



# COMPUTERWORLD'S EIGHTH ANNUAL SALARY **SPECIAL REPORT** SURVEY



**PILING UP THE BUCKS . . .** At companies with revenue of \$500 million or more, at least 20% to 30% of respondents at all job levels reported salaries of \$100,000 or more.

**GIVING IT AWAY . . .** The industry most generous to senior IS management is banking, where CIOs and vice presidents reported earning as much as one-third of their total compensation from bonuses.

**EYES ON THE PRIZE . . .** In addition to banking, IS employees who want a fat paycheck should work in the aerospace, insurance, chemical, hardware/software or IS services industries, which scored the highest mean salary on average among the 28 job functions surveyed.

TOP IS MANAGEMENT				NETWORKS				SYSTEMS DEVELOPMENT	
CIO/ VP IS/ MIS/DP	Director, systems development	Director, networks	Director, IS operations	Telecom- munications manager	Telecom- munications specialist	Network administrator	LAN manager	Project manager, systems and programming	Senior systems analyst
Average: <b>\$93,472</b> Bonus: <b>\$14,563</b> Total: <b>\$108,035</b>	Average: <b>\$68,401</b> Bonus: <b>\$5,635</b> Total: <b>\$74,036</b>	Average: <b>\$64,738</b> Bonus: <b>\$4,636</b> Total: <b>\$69,374</b>	Average: <b>\$66,287</b> Bonus: <b>\$8,909</b> Total: <b>\$75,196</b>	Average: <b>\$53,269</b> Bonus: <b>\$2,542</b> Total: <b>\$55,811</b>	Average: <b>\$41,926</b> Bonus: <b>\$1,327</b> Total: <b>\$43,253</b>	Average: <b>\$43,084</b> Bonus: <b>\$1,408</b> Total: <b>44,492</b>	Average: <b>\$43,821</b> Bonus: <b>\$1,936</b> Total: <b>\$45,757</b>	Average: <b>\$55,987</b> Bonus: <b>\$2,756</b> Total: <b>\$58,743</b>	Average: <b>\$49,969</b> Bonus: <b>\$1,909</b> Total: <b>\$51,878</b>
INDUSTRY, NONMANUFACTURING									
Banking <b>\$193,921</b>	IS svc. <b>\$104,149</b>	Insurance <b>\$115,536</b>	IS svc. <b>\$100,688</b>	Insurance <b>\$86,500</b>	Distrib. <b>\$54,000</b>	Trans. <b>\$55,666</b>	Insurance <b>\$61,755</b>	Insurance <b>\$76,184</b>	IS svc. <b>\$65,777</b>
Nonprofit <b>\$182,963</b>	Banking <b>\$93,979</b>	IS svc. <b>\$98,333</b>	Insurance <b>\$97,688</b>	Distrib. <b>\$73,333</b>	Nonprofit <b>\$51,500</b>	Insurance <b>\$55,340</b>	Health <b>\$60,181</b>	IS svc. <b>\$70,522</b>	Health <b>\$61,375</b>
Trans. <b>\$180,845</b>	Bus. svc. non-IS <b>\$89,434</b>	Banking <b>\$97,864</b>	Retail <b>\$78,323</b>	Banking <b>\$66,701</b>	Banking <b>\$50,200</b>	Distrib. <b>\$54,333</b>	Media <b>\$56,000</b>	Media <b>\$66,307</b>	Bus. svc. non-IS <b>\$61,080</b>
Insurance <b>\$150,497</b>	Media <b>\$88,114</b>	Distrib. <b>\$90,000</b>	Banking <b>\$77,994</b>	IS svc. <b>\$63,376</b>	Retail <b>\$49,666</b>	Nonprofit <b>\$52,000</b>	Retail <b>\$55,333</b>	Banking <b>\$66,094</b>	Banking <b>\$58,375</b>
IS svc. <b>\$140,700</b>	Insurance <b>\$86,818</b>	Media <b>\$85,833</b>	Media <b>\$66,588</b>	Retail <b>\$60,750</b>	Insurance <b>\$49,000</b>	Utils. <b>\$51,400</b>	Utils. <b>\$54,000</b>	Retail <b>\$64,753</b>	Utils. <b>\$54,571</b>
Media <b>\$113,131</b>	Retail <b>\$82,511</b>	Retail <b>\$85,233</b>	Trans. <b>\$65,714</b>	Trans. <b>\$59,500</b>	Trans. <b>\$48,750</b>	Retail <b>\$50,357</b>	Nonprofit <b>\$52,750</b>	Distrib. <b>\$61,333</b>	Nonprofit <b>\$54,500</b>
Bus. svc. non-IS <b>\$107,761</b>	Health <b>\$73,480</b>	Bus. svc. non-IS <b>\$76,667</b>	Health <b>\$65,678</b>	Bus. svc. non-IS <b>\$58,050</b>	Bus. svc. non-IS <b>\$48,667</b>	Bus. svc. non-IS <b>\$47,214</b>	Distrib. <b>\$52,166</b>	Nonprofit <b>\$60,125</b>	Insurance <b>\$53,410</b>
Retail <b>\$99,981</b>	Govt. <b>\$68,620</b>	Health <b>\$67,938</b>	Bus. svc. non-IS <b>\$65,515</b>	Govt. <b>\$57,510</b>	Govt. <b>\$45,218</b>	Govt. <b>\$46,625</b>	IS svc. <b>\$51,188</b>	Trans. <b>\$57,666</b>	Educ. <b>\$52,666</b>
Health <b>\$93,959</b>	Nonprofit <b>\$66,979</b>	Trans. <b>\$66,001</b>	Utils. <b>\$64,000</b>	Nonprofit <b>\$53,166</b>	Media <b>\$45,000</b>	IS svc. <b>\$46,354</b>	Govt. <b>\$48,519</b>	Bus. svc. non-IS <b>\$57,314</b>	Govt. <b>\$52,388</b>
Distrib. <b>\$93,323</b>	Utils. <b>\$66,595</b>	Govt. <b>\$60,721</b>	Distrib. <b>\$63,535</b>	Media <b>\$52,981</b>	IS svc. <b>\$41,667</b>	Educ. <b>\$44,937</b>	Trans. <b>\$45,250</b>	Govt. <b>\$56,477</b>	Distrib. <b>\$51,900</b>
Utils. <b>\$81,783</b>	Educ. <b>\$66,321</b>	Educ. <b>\$60,141</b>	Nonprofit <b>\$61,167</b>	Educ. <b>\$52,480</b>	Educ. <b>\$39,464</b>	Banking <b>\$43,952</b>	Bus. svc. non-IS <b>\$44,636</b>	Utils. <b>\$56,027</b>	Retail <b>\$49,000</b>
Educ. <b>\$82,300</b>	Distrib. <b>\$66,200</b>	Utils. <b>\$59,357</b>	Govt. <b>\$61,076</b>	Utils. <b>\$47,833</b>	Utils. <b>\$38,250</b>	Media <b>\$41,857</b>	Educ. <b>\$44,075</b>	Health <b>\$55,625</b>	Trans. <b>\$47,700</b>
Govt. <b>\$80,364</b>	Trans. <b>\$64,000</b>	Nonprofit <b>\$51,333</b>	Educ. <b>\$59,756</b>	Health <b>\$44,938</b>	Health <b>\$32,666</b>	Health <b>\$39,892</b>	Banking <b>\$42,377</b>	Educ. <b>\$54,275</b>	Media <b>\$46,050</b>
INDUSTRY, MANUFACTURING									
Chemical <b>\$124,916</b>	Chemical <b>\$99,937</b>	Agri. <b>\$110,000</b>	Chemical <b>\$103,679</b>	Chemical <b>\$63,309</b>	Chemical <b>\$56,523</b>	Ind. equip. <b>\$51,500</b>	Textile <b>\$58,666</b>	Ind. equip. <b>\$73,250</b>	Hrdwre/ Sftwre <b>\$65,833</b>
Hrdwre/ Sftwre <b>\$109,650</b>	Hrdwre/ Sftwre <b>\$86,433</b>	Chemical <b>\$104,025</b>	Hrdwre/ Sftwre <b>\$85,000</b>	Hrdwre/ Sftwre <b>\$60,500</b>	Metal/ Plastic <b>\$52,583</b>	Chemical <b>\$48,083</b>	Chemical <b>\$50,937</b>	Chemical <b>\$70,333</b>	Textile <b>\$64,000</b>
Agri. <b>\$103,520</b>	Pharm. <b>\$79,000</b>	Hrdwre/ Sftwre <b>\$87,417</b>	Agri. <b>\$81,333</b>	Agri. <b>\$57,500</b>	Agri. <b>\$41,500</b>	Pharm. <b>\$48,000</b>	Hrdwre/ Sftwre <b>\$50,500</b>	Agri. <b>\$64,285</b>	Chemical <b>\$60,712</b>
Food/Bev. <b>\$102,866</b>	Food/Bev. <b>\$74,125</b>	Metal/ Plastic <b>\$84,000</b>	Metal/ Plastic <b>\$72,671</b>	Metal/ Plastic <b>\$57,250</b>	Ind. equip. <b>\$37,500</b>	Agri. <b>\$46,000</b>	Agri. <b>\$45,500</b>	Hrdwre/ Sftwre <b>\$64,178</b>	Agri. <b>\$56,166</b>
Metal/ Plastic <b>\$99,476</b>	Agri. <b>\$72,583</b>	Ind. equip. <b>\$65,500</b>	Pharm. <b>\$71,667</b>	Ind. equip. <b>\$54,500</b>	Hrdwre/ Sftwre <b>\$37,000</b>	Hrdwre/ Sftwre <b>\$45,500</b>	Metal/ Plastic <b>\$43,441</b>	Textile <b>\$63,166</b>	Ind. equip. <b>\$54,250</b>
Pharm. <b>\$95,458</b>	Metal/ Plastic <b>\$71,628</b>	Food/Bev. <b>\$62,417</b>	Food/Bev. <b>\$64,542</b>	Food/Bev. <b>\$45,166</b>	Food/Bev. <b>\$36,000</b>	Food/Bev. <b>\$43,138</b>	Food/Bev. <b>\$42,125</b>	Food/Bev. <b>\$62,300</b>	Food/Bev. <b>\$52,750</b>
Ind. equip. <b>\$86,750</b>	Textile <b>\$68,875</b>	Textile <b>\$50,000</b>	Ind. equip. <b>\$63,667</b>	Textile <b>NA</b>	Textile <b>\$30,500</b>	Food/Bev. <b>\$36,000</b>	Ind. equip. <b>\$38,500</b>	Pharm. <b>\$59,250</b>	Metal/ Plastic <b>\$49,786</b>
Textile <b>\$86,083</b>	Ind. equip. <b>\$55,905</b>	Pharm. <b>NA</b>	Textile <b>\$59,400</b>	Pharm. <b>NA</b>	Pharm. <b>NA</b>	Textile <b>NA</b>	Pharm. <b>NA</b>	Metal/ Plastic <b>\$57,766</b>	Pharm. <b>\$49,000</b>
COMPANY SIZE									
Under \$100M: <b>\$101,537</b>	Under \$100M: <b>\$65,580</b>	Under \$100M: <b>\$55,190</b>	Under \$100M: <b>\$71,264</b>	Under \$100M: <b>\$49,104</b>	Under \$100M: <b>\$37,560</b>	Under \$100M: <b>\$39,469</b>	Under \$100M: <b>\$39,854</b>	Under \$100M: <b>\$53,055</b>	Under \$100M: <b>\$50,080</b>
\$100M - \$500M: <b>\$95,235</b>	\$100M - \$500M: <b>\$72,176</b>	\$100M - \$500M: <b>\$65,934</b>	\$100M - \$500M: <b>\$69,259</b>	\$100M - \$500M: <b>\$49,911</b>	\$100M - \$500M: <b>\$39,648</b>	\$100M - \$500M: <b>\$45,191</b>	\$100M - \$500M: <b>\$46,223</b>	\$100M - \$500M: <b>\$58,048</b>	\$100M - \$500M: <b>\$50,143</b>
Over \$500M: <b>\$144,798</b>	Over \$500M: <b>\$88,793</b>	Over \$500M: <b>\$85,574</b>	Over \$500M: <b>\$90,896</b>	Over \$500M: <b>\$65,546</b>	Over \$500M: <b>\$50,716</b>	Over \$500M: <b>\$51,193</b>	Over \$500M: <b>\$51,888</b>	Over \$500M: <b>\$65,886</b>	Over \$500M: <b>\$56,525</b>

NA: Not available; respondent base too small to report findings





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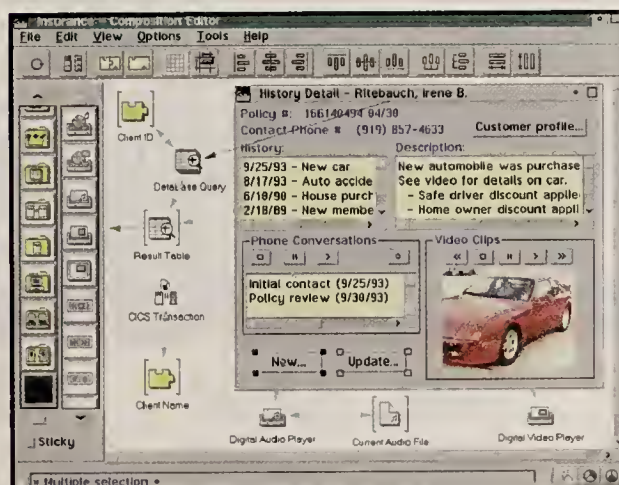
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## COMPUTERWORLD'S EIGHTH ANNUAL SALARY **SPECIAL REPORT** SURVEY



**PUTTING IT ON THE LINE . . .** Nearly 40% of respondents have a portion of their total compensation based on performance bonuses or at risk. Forty-one percent of those who don't have pay-for-performance plans wish they did.

**THE BIGGER THEY ARE . . .** Over 60% of companies earning more than \$500 million base part of IS staff compensation on personal, department or company performance, compared with 38% for companies with less than \$500 million in revenue.

**AND I ALSO WANT . . .** If not already available, the most desired benefits are: telecommuting (41%), sabbaticals (26%), profit sharing or stock options (26%), flexible hours (25%), on-site child care (18%) and retirement or pension plans (17%).

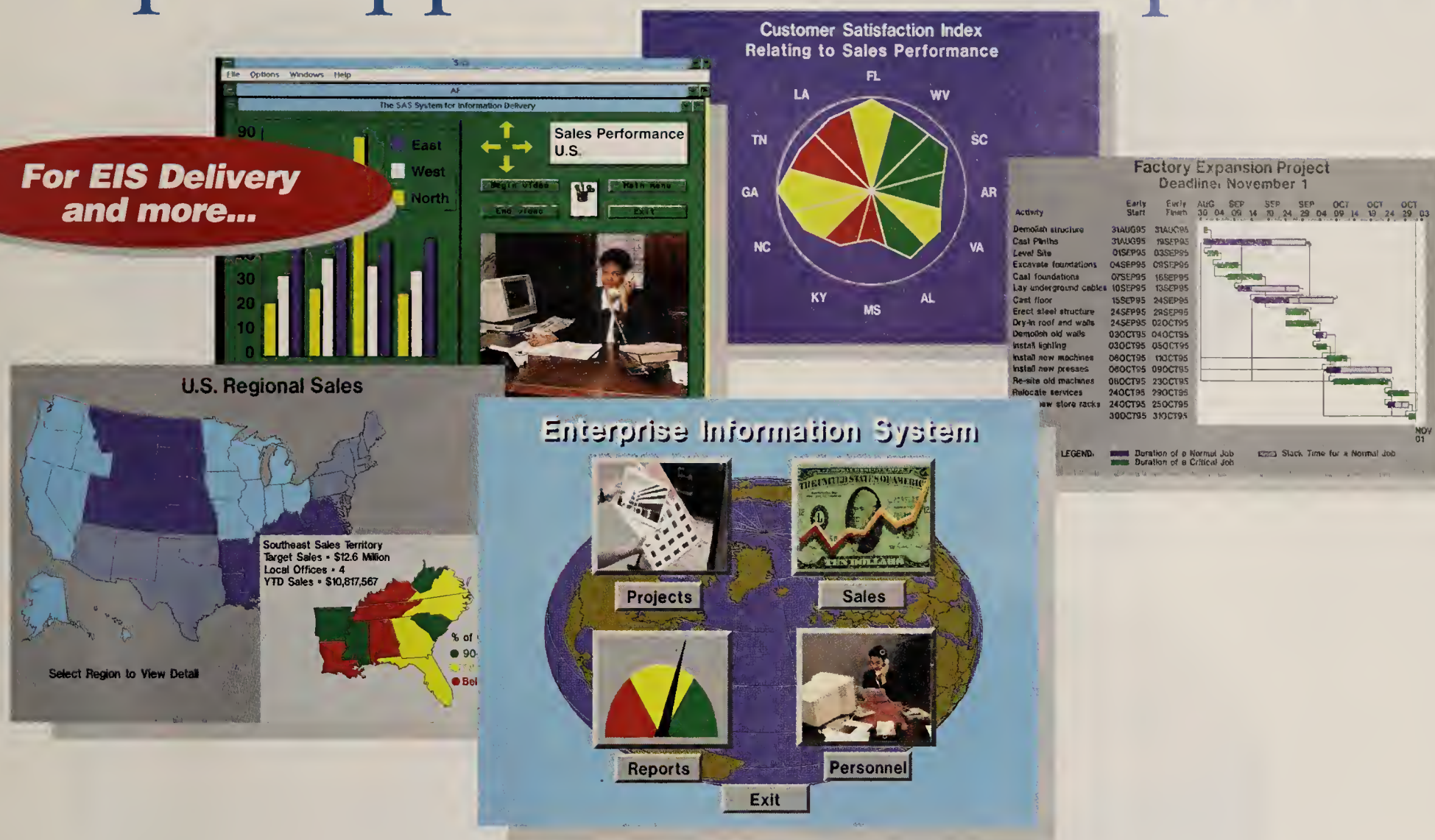
SYSTEMS DEVELOPMENT								TECHNICAL SERVICES/OPERATIONS			
Systems analyst	Senior systems programmer	Systems programmer	Senior programmer/analyst	Programmer/analyst	Database manager	Database analyst	Data security administrator/analyst	Computer operations manager	Computer operations supervisor		
Average: \$42,994 Bonus: \$5,320 Total: \$48,314	Average: \$51,845 Bonus: \$1,885 Total: \$53,730	Average: \$43,697 Bonus: \$969 Total: \$44,666	Average: \$44,350 Bonus: \$1,885 Total: \$46,235	Average: \$39,570 Bonus: \$967 Total: \$40,537	Average: \$56,191 Bonus: \$2,263 Total: \$58,453	Average: \$51,700 Bonus: \$1,144 Total: \$52,844	Average: \$58,687 Bonus: \$14,592 Total: \$73,279	Average: \$53,984 Bonus: \$2,506 Total: \$56,490	Average: \$39,113 Bonus: \$1,286 Total: \$40,399		
INDUSTRY, NONMANUFACTURING											
Banking \$56,785	IS svc. \$74,159	IS svc. \$52,125	Insurance \$56,442	Banking \$45,369	Distrib. \$73,500	Distrib. \$63,000	IS svc. \$54,866	Distrib. \$67,708	Utils. \$51,000		
IS svc. \$55,825	Insurance \$70,122	Banking \$51,750	Health \$56,307	IS svc. \$45,000	Banking \$72,583	IS svc. \$61,325	Trans. \$54,000	IS svc. \$63,876	Insurance \$50,866		
Bus. svc. non-IS \$52,875	Retail \$59,750	Insurance \$49,525	Banking \$53,290	Insurance \$42,591	Insurance \$64,875	Insurance \$57,187	Distrib. \$53,500	Insurance \$59,765	Govt. \$44,679		
Nonprofit \$51,000	Govt. \$59,708	Govt. \$47,833	Govt. \$50,831	Utils. \$41,571	Educ. \$63,066	Banking \$52,928	Banking \$52,583	Govt. \$55,781	Bus. svc. non-IS \$43,250		
Distrib. \$46,666	Banking \$58,852	Trans. \$47,750	IS svc. \$49,519	Govt. \$40,720	Retail \$63,000	Govt. \$52,821	Retail \$51,149	Utils. \$55,166	IS svc. \$42,475		
Insurance \$45,054	Distrib. \$58,666	Distrib. \$47,750	Nonprofit \$48,642	Trans. \$40,500	Bus. svc. non-IS \$61,300	Utils. \$50,678	Bus. svc. non-IS \$50,000	Media \$53,979	Educ. \$41,166		
Trans. \$44,666	Utils. \$58,125	Educ. \$43,920	Retail \$48,393	Media \$38,875	Health \$60,000	Educ. \$50,416	Insurance \$49,200	Retail \$53,592	Media \$40,666		
Utils. \$44,000	Bus. svc. non-IS \$53,850	Health \$42,800	Distrib. \$48,111	Distrib. \$37,392	Media \$59,833	Bus. svc. non-IS \$50,000	Govt. \$48,256	Banking \$51,437	Distrib. \$39,875		
Govt. \$43,723	Health \$52,500	Retail \$42,333	Trans. \$47,071	Bus. svc. non-IS \$36,936	Govt. \$58,205	Health \$49,750	Educ. \$44,678	Trans. \$48,883	Banking \$39,714		
Educ. \$43,676	Trans. \$50,000	Media \$39,750	Utils. \$46,050	Retail \$36,781	IS svc. \$57,500	Trans. \$48,750	Utils. \$44,000	Nonprofit \$48,666	Health \$38,312		
Retail \$41,590	Educ. \$49,942	Bus. svc. non-IS \$35,000	Bus. svc. non-IS \$45,757	Health \$36,127	Trans. \$54,000	Media \$42,500	Media \$40,000	Bus. svc. non-IS \$47,190	Trans. \$35,800		
Media \$40,000	Media \$45,100	Utils. \$31,000	Educ. \$45,261	Educ. \$35,396	Utils. \$51,750	Retail \$39,875	Health \$35,500	Educ. \$45,861	Retail \$33,424		
Health \$38,208	Nonprofit \$45,000	Nonprofit NA	Media \$44,375	Nonprofit \$34,285	Nonprofit \$23,000	Nonprofit \$32,000	Nonprofit NA	Health \$45,590	Nonprofit NA		
INDUSTRY, MANUFACTURING											
Hrdwre/Sftwre \$55,000	Hrdwre/Sftwre \$76,666	Ind. equip. \$59,500	Hrdwre/Sftwre \$52,214	Chemical \$43,444	Ind. equip. \$85,000	Ind. equip. \$60,000	Chemical \$59,127	Hrdwre/Sftwre \$66,916	Chemical \$50,142		
Chemical \$54,562	Chemical \$63,500	Agri. \$56,500	Chemical \$51,928	Food/Bev. \$42,950	Chemical \$67,000	Chemical \$58,500	Metal/Plastic \$51,000	Agri. \$63,300	Hrdwre/Sftwre \$49,666		
Food/Bev. \$51,500	Textile \$59,500	Textile \$55,000	Metal/Plastic \$51,921	Metal/Plastic \$41,782	Metal/Plastic \$62,750	Agri. \$56,000	Agri. \$49,000	Chemical \$62,972	Agri. \$47,000		
Agri. \$49,666	Ind. equip. \$54,975	Chemical \$53,916	Ind. equip. \$50,000	Hrdwre/Sftwre \$40,500	Agri. \$59,000	Hrdwre/Sftwre \$50,125	Textile NA	Metal/Plastic \$61,904	Food/Bev. \$43,500		
Textile \$47,250	Food/Bev. \$53,250	Food/Bev. \$52,000	Pharm. \$48,500	Pharm. \$39,000	Hrdwre/Sftwre \$57,000	Metal/Plastic \$49,275	Hrdwre/Sftwre NA	Pharm. \$57,000	Ind. equip. \$38,700		
Pharm. \$43,500	Agri. \$51,333	Hrdwre/Sftwre \$41,000	Food/Bev. \$48,250	Agri. \$38,678	Food/Bev. \$53,000	Food/Bev. \$48,000	Food/Bev. NA	Ind. equip. \$50,000	Metal/Plastic \$36,866		
Metal/Plastic \$41,900	Metal/Plastic \$49,316	Metal/Plastic \$40,900	Agri. \$47,333	Textile \$37,000	Textile NA	Pharm. \$42,000	Ind. equip. NA	Textile \$47,750	Textile \$31,500		
Ind. equip. \$41,500	Pharm. NA	Pharm. NA	Textile \$37,211	Ind. equip. \$36,250	Pharm. NA	Textile NA	Pharm. NA	Food/Bev. \$43,666	Pharm. \$28,000		
COMPANY SIZE											
Under \$100M: \$56,159	Under \$100M: \$48,467	Under \$100M: \$40,141	Under \$100M: \$43,031	Under \$100M: \$43,206	Under \$100M: \$52,268	Under \$100M: \$65,572	Under \$100M: \$161,874	Under \$100M: \$56,829	Under \$100M: \$36,154		
\$100M – \$500M: \$41,727	\$100M – \$500M: \$53,600	\$100M – \$500M: \$43,625	\$100M – \$500M: \$46,585	\$100M – \$500M: \$37,521	\$100M – \$500M: \$57,500	\$100M – \$500M: \$45,797	\$100M – \$500M: \$44,571	\$100M – \$500M: \$51,054	\$100M – \$500M: \$38,772		
Over \$500M: \$48,795	Over \$500M: \$58,390	Over \$500M: \$49,040	Over \$500M: \$49,579	Over \$500M: \$41,466	Over \$500M: \$63,609	Over \$500M: \$52,615	Over \$500M: \$51,538	Over \$500M: \$62,646	Over \$500M: \$45,606		

NA Not available, respondent base too small to report findings



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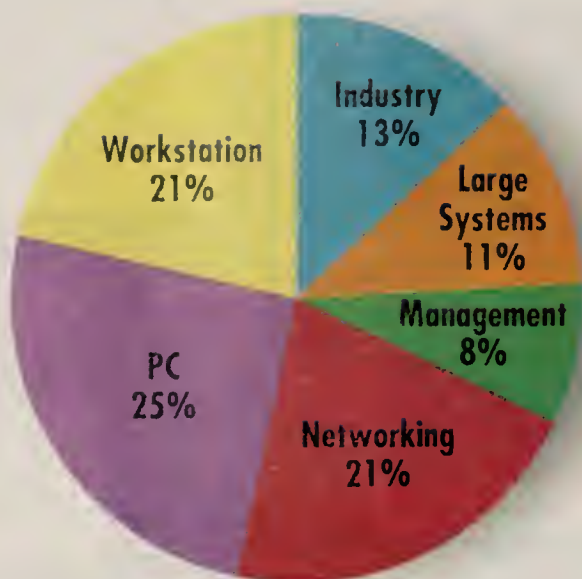


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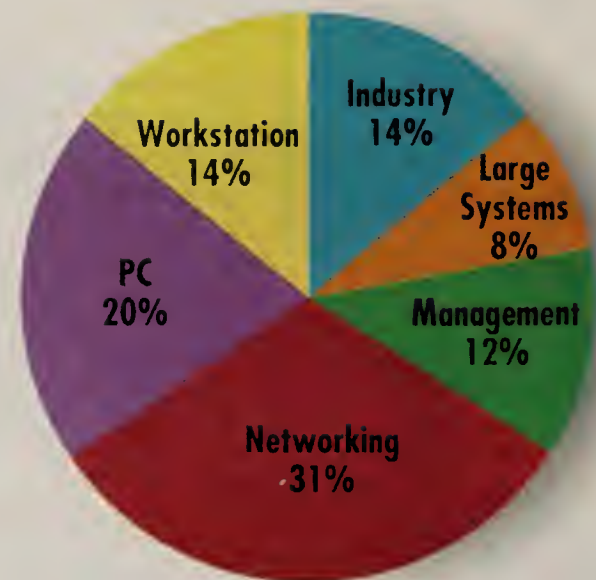
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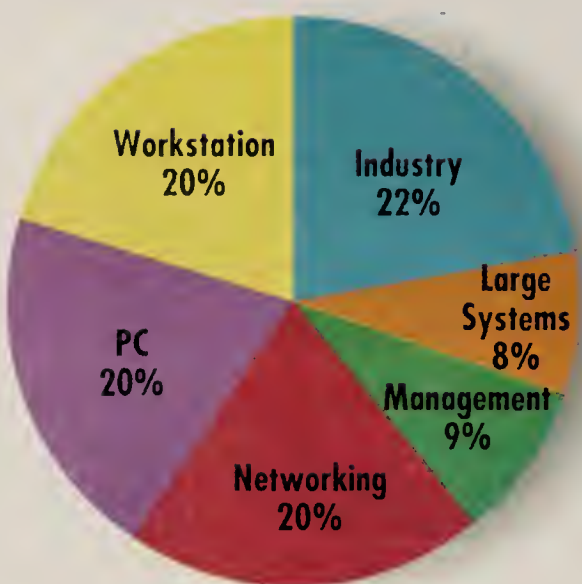
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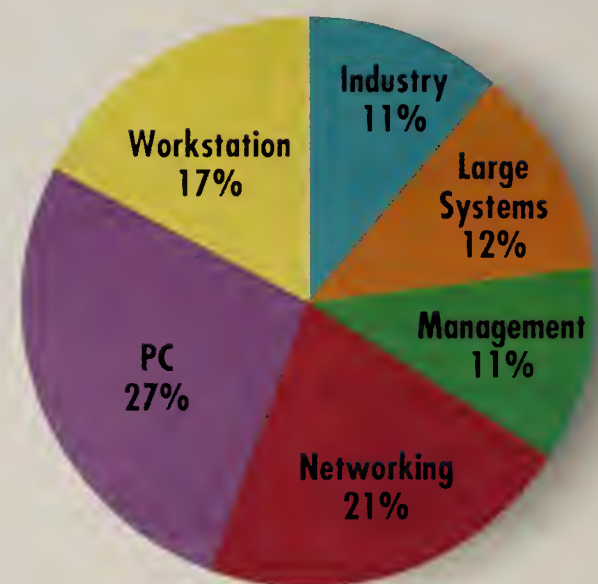
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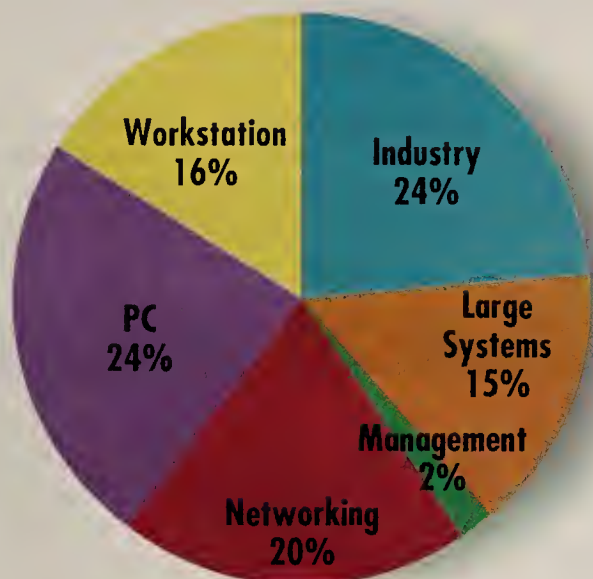
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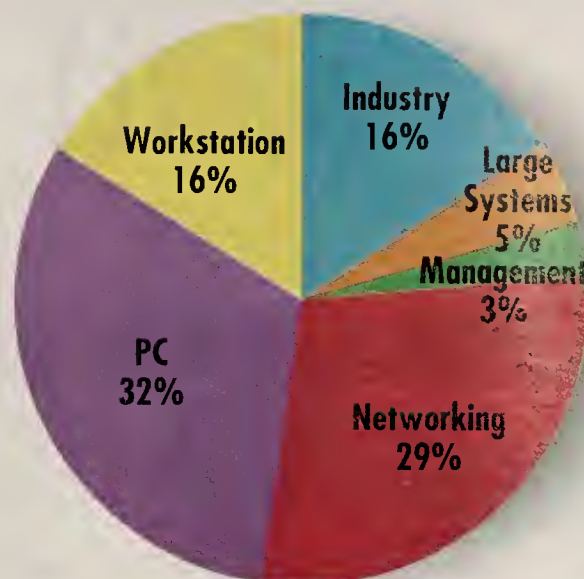
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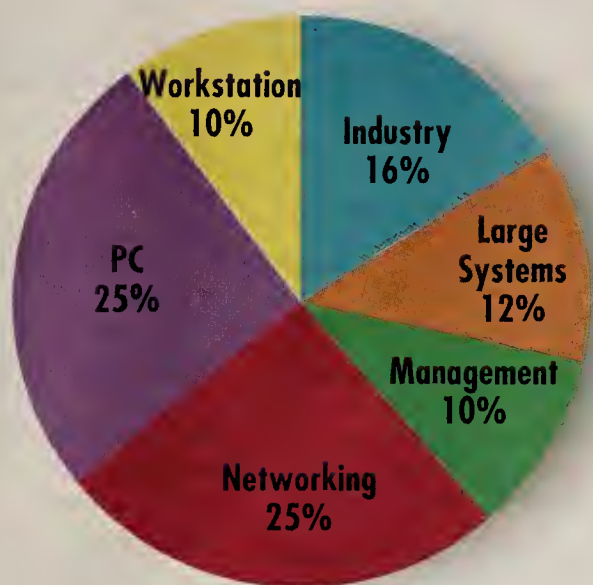
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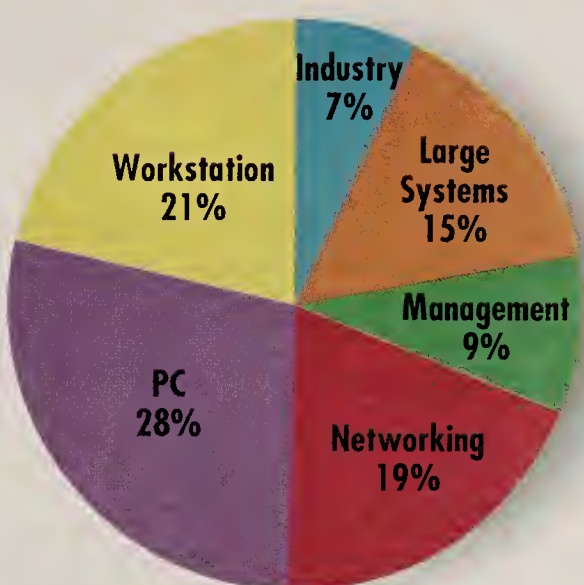
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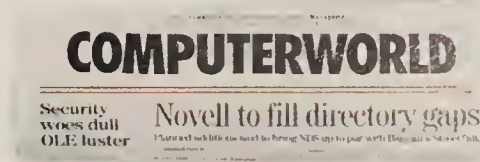
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## COMPUTERWORLD'S EIGHTH ANNUAL SALARY **SPECIAL REPORT** SURVEY



**\$ FEELING THE CHILL . . .** Clearly things are tough at companies with revenue of less than \$100 million, where 17% of all respondents report being under a salary freeze.

**\$ HARDLY A PULSE . . .** Despite the increasingly important role of IS in health care, IS employees in that field emerged as among the lowest paid of all industries we surveyed.

**\$ BARE NECESSITIES . . .** Other industries most often paying the lowest salaries are the textile, food and beverage, and pharmaceutical industries.

TECHNICAL SERVICES/OPERATIONS			PC END-USER SUPPORT				
Lead computer operator	Computer operator	Technical specialist	Microcomputer manager/End-user computing manager	Technical support manager/Help desk manager	Help desk operator	PC technical support specialist	Business services analyst
Average: <b>\$29,140</b> Bonus: <b>\$5,322</b> Total: <b>\$34,462</b>	Average: <b>\$29,800</b> Bonus: <b>\$3,587</b> Total: <b>\$33,387</b>	Average: <b>\$35,752</b> Bonus: <b>\$1,143</b> Total: <b>\$36,895</b>	Average: <b>\$51,296</b> Bonus: <b>\$10,543</b> Total: <b>\$61,839</b>	Average: <b>\$42,705</b> Bonus: <b>\$1,560</b> Total: <b>\$44,265</b>	Average: <b>\$29,079</b> Bonus: <b>\$1,023</b> Total: <b>\$30,102</b>	Average: <b>\$32,069</b> Bonus: <b>\$1,161</b> Total: <b>\$33,230</b>	Average: <b>\$41,269</b> Bonus: <b>\$1,281</b> Total: <b>\$42,550</b>
INDUSTRY, NONMANUFACTURING							
Health <b>\$49,295</b>	Health <b>\$31,378</b>	Distrib. <b>\$55,000</b>	IS svc. <b>\$71,928</b>	Distrib. <b>\$60,666</b>	IS svc. <b>\$44,533</b>	Distrib. <b>\$47,976</b>	IS svc. <b>\$60,000</b>
IS svc. <b>\$37,900</b>	Govt. <b>\$29,916</b>	Media <b>\$44,350</b>	Trans. <b>\$71,250</b>	Banking <b>\$56,277</b>	Nonprofit <b>\$37,166</b>	Govt. <b>\$41,126</b>	Nonprofit <b>\$55,000</b>
Insurance <b>\$35,438</b>	Trans. <b>\$29,250</b>	Trans. <b>\$43,437</b>	Banking <b>\$70,916</b>	Insurance <b>\$56,083</b>	Govt. <b>\$34,875</b>	Utils. <b>\$38,515</b>	Insurance <b>\$52,400</b>
Govt. <b>\$33,900</b>	Nonprofit <b>\$29,163</b>	Bus. svc. non-IS <b>\$42,870</b>	Nonprofit <b>\$66,500</b>	Bus. svc. non-IS <b>\$50,000</b>	Distrib. <b>\$34,500</b>	IS svc. <b>\$37,375</b>	Banking <b>\$52,000</b>
Bus. svc. non-IS <b>\$33,500</b>	Distrib. <b>\$27,886</b>	IS svc. <b>\$40,418</b>	Insurance <b>\$64,200</b>	Trans. <b>\$52,875</b>	Bus. svc. non-IS <b>\$33,928</b>	Trans. <b>\$37,200</b>	Distrib. <b>\$48,000</b>
Banking <b>\$30,801</b>	IS svc. <b>\$27,375</b>	Nonprofit <b>\$40,187</b>	Distrib. <b>\$64,166</b>	Media <b>\$52,000</b>	Utils. <b>\$32,583</b>	Banking <b>\$35,011</b>	Bus. svc. non-IS <b>\$45,000</b>
Media <b>\$30,357</b>	Retail <b>\$27,193</b>	Retail <b>\$37,500</b>	Bus. svc. non-IS <b>\$62,175</b>	Utils. <b>\$51,000</b>	Banking <b>\$31,277</b>	Media <b>\$34,850</b>	Trans. <b>\$43,400</b>
Distrib. <b>\$29,500</b>	Insurance <b>\$26,375</b>	Insurance <b>\$36,000</b>	Media <b>\$55,800</b>	Health <b>\$46,708</b>	Insurance <b>\$29,839</b>	Insurance <b>\$34,427</b>	Govt. <b>\$40,777</b>
Edu. <b>\$28,520</b>	Media <b>\$25,386</b>	Govt. <b>\$34,694</b>	Health <b>\$53,750</b>	Retail <b>\$45,464</b>	Edu. <b>\$28,800</b>	Retail <b>\$33,850</b>	Health <b>\$40,333</b>
Utils. <b>\$28,083</b>	Utils. <b>\$25,333</b>	Edu. <b>\$34,050</b>	Utils. <b>\$50,904</b>	Govt. <b>\$45,135</b>	Media <b>\$28,500</b>	Bus. svc. non-IS <b>\$31,669</b>	Edu. <b>\$38,687</b>
Trans. <b>\$27,500</b>	Bus. svc. non-IS <b>\$25,050</b>	Banking <b>\$32,287</b>	Govt. <b>\$50,223</b>	IS svc. <b>\$43,566</b>	Health <b>\$28,000</b>	Health <b>\$31,615</b>	Media <b>\$31,500</b>
Nonprofit <b>\$27,000</b>	Edu. <b>\$25,046</b>	Utils. <b>\$33,500</b>	Edu. <b>\$47,701</b>	Nonprofit <b>\$40,333</b>	Retail <b>\$27,000</b>	Edu. <b>\$31,070</b>	Utils. <b>NA</b>
Retail <b>\$26,611</b>	Banking <b>\$24,729</b>	Health <b>\$29,166</b>	Retail <b>\$46,667</b>	Edu. <b>\$38,397</b>	Trans. <b>\$24,500</b>	Nonprofit <b>\$30,000</b>	Retail <b>NA</b>
INDUSTRY, MANUFACTURING							
Agri. <b>\$41,000</b>	Ind. equip. <b>\$35,000</b>	Hrdwre/Sftwre <b>\$42,833</b>	Chemical <b>\$84,785</b>	Pharm. <b>\$65,000</b>	Chemical <b>\$40,416</b>	Ind. equip. <b>\$42,500</b>	Ind. equip. <b>\$51,250</b>
Ind. equip. <b>\$33,500</b>	Hrdwre/Sftwre <b>\$28,333</b>	Pharm. <b>\$42,500</b>	Agri. <b>\$66,583</b>	Chemical <b>\$52,555</b>	Ind. equip. <b>\$34,500</b>	Hrdwre/Sftwre <b>\$39,500</b>	Metal/Plastic <b>\$48,033</b>
Hrdwre/Sftwre <b>\$31,340</b>	Chemical <b>\$26,616</b>	Chemical <b>\$41,083</b>	Hrdwre/Sftwre <b>\$65,000</b>	Hrdwre/Sftwre <b>\$47,750</b>	Agri. <b>\$33,500</b>	Chemical <b>\$39,150</b>	Chemical <b>\$44,500</b>
Textile <b>\$30,222</b>	Food/Bev. <b>\$25,566</b>	Ind. equip. <b>\$39,500</b>	Ind. equip. <b>\$62,750</b>	Ind. equip. <b>\$46,750</b>	Hrdwre/Sftwre <b>\$33,000</b>	Agri. <b>\$35,400</b>	Agri. <b>\$43,500</b>
Chemical <b>\$30,500</b>	Pharm. <b>\$24,875</b>	Metal/Plastic <b>\$37,416</b>	Textile <b>\$54,250</b>	Metal/Plastic <b>\$43,944</b>	Food/Bev. <b>\$28,333</b>	Pharm. <b>\$34,833</b>	Textile <b>NA</b>
Metal/Plastic <b>\$29,333</b>	Metal/Plastic <b>\$23,584</b>	Agri. <b>\$36,625</b>	Metal/Plastic <b>\$52,000</b>	Agri. <b>\$39,000</b>	Metal/Plastic <b>\$26,333</b>	Textile <b>\$32,250</b>	Hrdwre/Sftwre <b>NA</b>
Food/Bev. <b>\$27,500</b>	Agri. <b>\$23,250</b>	Textile <b>\$35,000</b>	Pharm. <b>\$49,000</b>	Textile <b>\$34,500</b>	Pharm. <b>\$25,500</b>	Metal/Plastic <b>\$30,611</b>	Food/Bev. <b>NA</b>
Pharm. <b>\$23,500</b>	Textile <b>\$17,880</b>	Food/Bev. <b>NA</b>	Food/Bev. <b>\$45,250</b>	Food/Bev. <b>\$29,000</b>	Textile <b>\$24,000</b>	Food/Bev. <b>\$30,600</b>	Pharm. <b>NA</b>
COMPANY SIZE							
Under \$100M: <b>\$39,867</b>	Under \$100M: <b>\$44,521</b>	Under \$100M: <b>\$32,025</b>	Under \$100M: <b>\$69,475</b>	Under \$100M: <b>\$35,463</b>	Under \$100M: <b>\$27,528</b>	Under \$100M: <b>\$29,972</b>	Under \$100M: <b>\$41,450</b>
\$100M - \$500M: <b>\$30,171</b>	\$100M - \$500M: <b>\$24,242</b>	\$100M - \$500M: <b>\$39,427</b>	\$100M - \$500M: <b>\$51,447</b>	\$100M - \$500M: <b>\$41,859</b>	\$100M - \$500M: <b>\$28,508</b>	\$100M - \$500M: <b>\$33,274</b>	\$100M - \$500M: <b>\$37,711</b>
Over \$500M: <b>\$33,268</b>	Over \$500M: <b>\$28,233</b>	Over \$500M: <b>\$41,316</b>	Over \$500M: <b>\$66,806</b>	Over \$500M: <b>\$53,242</b>	Over \$500M: <b>\$32,882</b>	Over \$500M: <b>\$36,804</b>	Over \$500M: <b>\$47,885</b>

NA: Not available, respondent base too small to report findings

### METHODOLOGY

Computerworld's Eighth Annual Salary Survey includes responses from 908 information systems professionals. Names were selected from lists supplied by the Society for Information Management, the Applied Computer Research directory, Computerworld's subscriber base and the Computerworld Buyers Database.

Surveys were mailed on July 19 and the results tabulated by IDG Research Services in Framingham, Mass.

### About the respondents

#### Sex:

Male: **787**  
Female: **112**

#### Average annual revenue or assets:

Nonmanufacturing: **\$873 million**  
Manufacturing: **\$1.9 billion**

#### Average number of IS employees:

Nonmanufacturing: **200**  
Manufacturing: **663**

#### Average total number of employees:

Nonmanufacturing: **5,786**  
Manufacturing: **17,596**

### Industry

#### (Nonmanufacturing)

Government **9.5%**  
Education **8%**  
Business services, IS **7.7%**  
Banking **7%**  
Business services, non-IS **6.3%**  
Health care **5.5%**  
Distribution **4.8%**  
Insurance **4.7%**  
Retail **4.7%**  
Nonprofit **3.7%**  
Media **3%**  
Transportation **2.4%**  
Utilities **1.9%**  
Other **4.9%**  
Total **74.1%**

### Industry

#### (Manufacturing)

Metal/Plastic **5.2%**  
Chemical **2.5%**  
Industrial equipment **2.2%**  
Hardware/Software **2%**  
Agriculture **1.8%**  
Textile **1.4%**  
Food/Beverage **1.2%**  
Pharmaceutical **1%**  
Other **8.6%**  
Total **25.9%**



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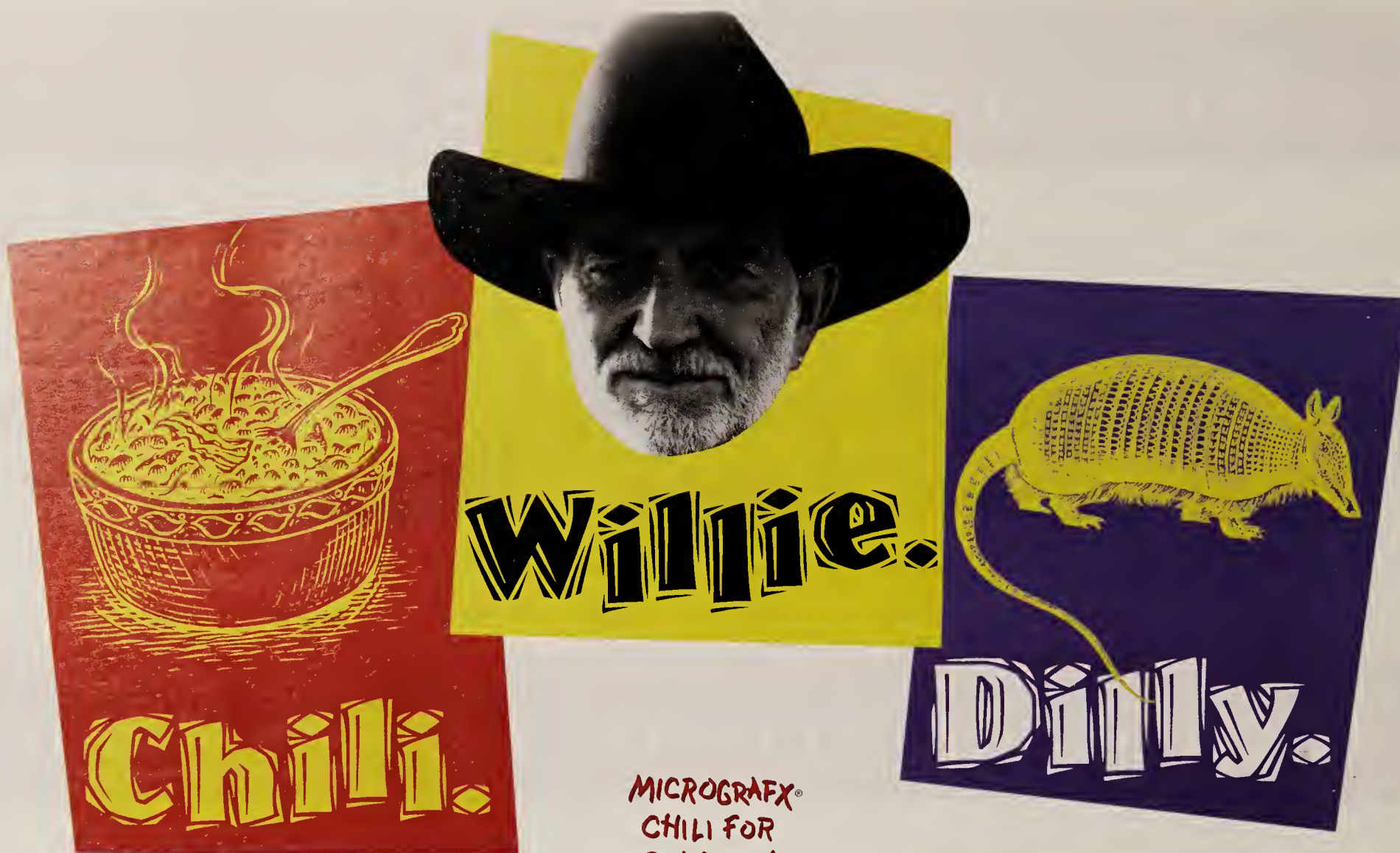
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# Calendar

## SEPT. 18-24

**1994 Symposium on Human Interaction with Complex Systems.** Greensboro, N.C., Sept. 18-20 — Topics include: "Modeling Complex Adaptive Systems for Design of Work Support" and "Enterprise Support Systems." Contact: North Carolina A&T State University, Greensboro, N.C. (910) 334-7780.

**1994 Society for Information Management (SIM) Annual Conference.** Salt Lake City, Sept. 18-21 — Theme: "Aligning Vectors in the Vortex: Piloting IT into Harmony with Business." Contact: SIM, Chicago, Ill. (312) 644-6610.

**PictureTel User Group's Third Annual Conference.** Scottsdale, Ariz., Sept. 18-21 — The conference will offer an exchange of information on strategies, directions, requirements and concerns relating to videoconferencing and multimedia on the desktop. Contact: Catherine Takaes, PictureTel User Group, Morristown, N.J. (201) 425-1414.

**Interex '94 Conference & Expo.** Denver, Sept. 18-22 — Audience: Hewlett-Packard Co. computing professionals. Topics: Open systems and standards, database technology, real time, desktop applications and integration, systems management, application development, business management and networking and interoperability. Sponsored by The International Association of Hewlett-Packard Computing Professionals. Contact: Interex, Sunnyvale, Calif. (408) 747-0227.

**Bar Coding in Warehousing, Inventory and Maintenance.** Atlanta, Sept. 19-20 — Other dates include Oct. 10-11 in Houston and Oct. 31-Nov. 1 in Chicago. Contact: The Hayo Consultants, East Northport, N.Y. (516) 757-4476.

**Outcomes Measurement and Management in Managed Care.** Boston, Sept. 19-20 — Focus: Nuts and bolts information to effectively collect, analyze and disseminate data on quality and outcomes. Topics: Developing a performance-based evaluation system for contracted providers and bridging the gap between academic research and managed care. Contact: Conference Development, Inc., Waltham, Mass. (617) 487-6700.

**The Institute of Internal Auditors' Advanced Technology Conference and Expo.** Lake Buena Vista, Fla., Sept. 19-21 — Contact: The Institute of Internal Auditors, Altamonte Springs, Fla. (407) 830-7600.

**Fifteenth Annual Computer Law Institute.** New York, Sept. 20-21 — Topics: Multimedia licensing, proprietary rights protection, NAFTA and GATT, negotiating outsourcing agreements and the electronic superhighway. Speaker: Gregory C. Simon, chief domestic policy adviser to Vice President Al Gore and former director of the House of Representatives Science, Space and Technology Committee's Subcommittee on Investigations and Oversight. Contact: Prentice Hall Law & Business, Englewood Cliffs, N.J. (800) 223-0231.

**Practical Client/Server Implementation Strategies.** Chicago, Sept. 20-21 — Theme: "Providing

Insight, Experience and Real-Life Solutions to the Process of Implementing Client/Server Technology." Focus: The many options available when implementing client/server technology, the process involved and the potential benefits. Topics: Graphical user interfaces, communications, database structure and design, hardware requirements, implementation methodologies

and key management issues. Contact: Deborah Turkot, The Client Server Solutions Group, Greenbrier & Russel, Inc., Schaumburg, Ill. (800) 453-0347.

**Data Warehousing Conference.** Washington, Sept. 20-22 — Topics: designing data warehouses, data warehouse in a client/server environment, the realities of the information warehouse and business advantage through dimensional analysis. Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

**Networks Expo '94.** Dallas, Sept. 20-22 — Contact: Bruno Blenheim, Inc., Fort Lee, N.J. (201) 346-1400.

**Sensors Expo.** Cleveland, Sept. 20-22 — Audience: products, systems, production and plant engineers, quality control, operations, purchasing managers and all others who use or specify sensors and related equipment. Contact: Cindi Cantow, Expocon Management Associates, Inc., Fairfield, Conn. (203) 256-4700.



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- Writing New Applications Optimized for the Wireless Data Industry
- Software Development Aids including New Tools and Testing Facilities
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Additional information about the CDPD Software Developers Conference is available on Internet World Wide Web server: [http://www.cellular.com/software\\_dev\\_conf.html](http://www.cellular.com/software_dev_conf.html). FTP File Server access is available at the following address: <ftp://ftp.cellular.com>.





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➤ In overtime, the save came from Cisco Systems. Cisco routers, combined with the expertise of EDS, provided the perfect way to deal with the mind boggling array of information needs presented by World Cup soccer. The Cisco routers offer impressive flexibility, so any number of protocols and interfaces can be used. In particular, Cisco's switched link activation handles overflow traffic when dedicated circuits overload—crucial for when the action heats up. After all, soccer journalists aren't known to suffer fools gladly, either. ➤

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# WHEN

FOR THESE NETWORK MANAGERS, AN OUNCE OF PREVENTION WASN'T WORTH A POUND OF CURE. BUT IF YOU LISTEN CLOSELY TO THEIR TALES, THE OLD ADAGE MIGHT WORK FOR YOU.

# DISASTER STRIKES

BY  
KEVIN R. SHARP

You're no rookie network manager. Even the hazards of electrical storms don't keep you awake nights. You've installed surge suppressors on all communications lines, power-line conditioners on all workstations and battery backup units on the critical network servers. You enforce strict security measures and distribute mission-critical applications over several servers so no single failure disrupts more than a few users. You run backups once a day, even twice for the accounting server. You store extra backups off-site.

Still, network failures can and do strike — sometimes in surprising ways and for seemingly trivial reasons. What follows are four tales of unexpected failures and how the network managers coped. Their names and some details have been changed to protect the innocent.

When disaster strikes, page 98

Sharp is a registered electrical engineer and technical editor for *IT Systems* magazine. He is also executive vice president of DataCentric seminars, where he develops programs for business managers tackling networking projects. He can be reached at (412) 374-9779.



ROBERT PIZZO



# WHEN DISASTER STRIKES

CONTINUED FROM PAGE 97

## THE COFFEE CATASTROPHE

Mary K. never worried much that an electrical surge would bring her network to its knees. She was confident that the fiber-optic cable linking the T1 and 56K-byte lines over which her network communicated would immunize her firm against disaster. After all, fiber-optic cables don't conduct electricity, so what could go wrong? Perhaps something minor, but certainly nothing serious.

Then one Monday morning it did. Shortly after she called in sick, Mary K. received a frantic call from her boss. The network was barely running. Applications had slowed to such a crawl they were all but useless. Worst of all, the order-entry system on which the company's profits depended had virtually ground to a halt. Was the entire network about to come crashing down? Would critical data be lost forever? Sick or not, Mary K. knew she had to get her company back in business. A quick dial-up diagnosis from her home revealed that the entire bank of T1 and 56K-byte digital lines were down.

What went wrong? An on-site diagnosis identified the culprit: a fried

multiplexer. It turned out that this device, which allows many different communications channels to share single, high-speed fiber-optic lines, was connected to the same circuit as the cafeteria's coffeemaker. Spikes caused by the coffeemaker fried the multiplexer's power supply. The fiber-optic cable was undamaged, but that was immaterial. The precaution intended to guard against this sort of disaster turned out to be irrelevant. It never occurred to Mary K. that the multiplexer could die.

When the high-speed links failed, the company's automatic dial-up systems established 56K-byte analog links. These provided only a fraction of the needed bandwidth, which is why the applications were running so slowly.

Mary K. replaced the multiplexer, and the lines were back in business.



## THE GUI GONE AWRY

Network managers don't often make the same mistake twice, but disasters can and will strike more than once. Paul S., who manages a 670-node Novell, Inc. NetWare 3.11 network that supports several distributed databases at a large government agency, can attest to that. First, the agency's uninterruptible power supply was accidentally unplugged (see story below left). Shortly after, Paul S. had to handle an unruly graphical user interface (GUI). It didn't look like a disaster waiting to happen, but that's exactly what it was.

Like many NetWare managers, Paul S. designed a GUI to simplify network maintenance. The interface was designed to allow authorized operators to perform complex operations quickly and easily. It let them do things such as execute "bindfix" and "bindrest" operations with the click of a mouse. Bindfix cleans up NetWare configuration files, including removing references, resources, drives and other objects no longer available on the network. Bindfix saves old configurations with the extension of \*.old. Bindrest opens these backup configurations and restores the network to the old configuration.

After long neglecting bindery maintenance, a conscientious administrator decided to "improve" the network by clicking on bindfix. But the mouse slipped, and he accidentally selected bindrest. Before the operator knew what had happened, the network was

restored to an ancient configuration. The lost data included the basic directory of network services. Every printer, disk drive and subdirectory added since the previous bindrest execution disappeared. New users no longer had accounts. New passwords reverted to old ones. Editable directories reverted to read-only status. Paul S. had yet another disaster on his hands.

Fortunately, Paul S. had a backup available. A recent backup tape contained the proper network configuration files. After the initial shock wore off, they were able to recover without too much trouble.

Needless to say, potentially dangerous administrative operations are no longer subject to the slip of a mouse. Paul S. has instated an automatic "Are you sure" warning before executing. These procedures are secured in a special access area, and only the most experienced network managers have access to them.

People sometimes worry needlessly about hackers and viruses, but more damage occurs from poor system maintenance than anything else, Paul S. says.

DELETED FOREVER

## THE CASE OF THE INTERRUPTIBLE UPS

Paul S. manages a 670-node Novell, Inc. NetWare 3.11 network that supports several distributed databases at a large government agency. Much of the data residing on the PCs is critical since the agency's work is regulatory-intensive. So to guard against power surges or temporary outages, he installed an uninterruptible power supply (UPS) unit to

disaster. But ironically, the disaster he encountered wasn't caused by a hurricane or an electrical storm. It was the result of a simple interruption of the power supply. What happened? (Promise not to laugh.) Someone accidentally unplugged the UPS device.

It turned out that the unit's power cord was accidentally unplugged during an equipment move. The power cord was yanked from the wall; the LAN crashed; users were frantic. Their data was corrupted, and business was brought to a halt. Hours later, once power was restored, Paul S. took the system off-line and replicated the databases from backup tapes while the users waited.

Paul S. has since secured all power switches by installing protective cages or by taping the cables in place. He also pays closer attention to power cords, making sure they cannot be accidentally pulled out.

"People spend so much time worrying about the big disaster culprits like viruses. But in reality, most crashes occur in simple but unexpected ways," Paul S. says. "You don't think something so trivial could happen, but it can."

each of the agency's five critical network servers. That, he figured, would protect against data corruption and keep users' systems running, even if it switched to backup battery power.

With a backup power supply, Paul was confident he could weather any



## THE PAYCHECK DEBACLE

The day before Sarah S. started her new job as a network manager, the hard disk on her future employer's accounting server crashed. On it were all of the company's payroll records, ready to generate paychecks that would be distributed the next day.

This was no way to start a new job, but Sarah S. wasn't worried. She figured fixing the system was only a matter of installing the backup tape. At the most, it would make for a long day, one that might run late into the night. But she was sure she could handle that, until she discovered that no backup tape existed.

The company had the let the previous network administrator go four weeks before the replacement arrived. Although in the interim two staff members were assigned to keep up with some of the basic maintenance functions, no one was specifically asked to back up the accounting server. They thought this happened automatically.

The bottom line was the company had to pay four people 300 hours of

overtime at \$10 an hour to reenter the data on a stand-alone PC and generate the paychecks. The job took the four of them three 16-hour days, and the employees were left waiting for their paychecks.

Worse still, Sarah S. had to pay a data recovery company \$4,800 to get the data off the disk drive, then paid a consultant thousands of dollars more to restore the network application and confirm that all the audit trails were intact.

Sarah S. says this won't happen again. Now she posts a backup schedule with instructions on when and how these procedures need to be performed. Even if she's not there, backups will be made. The moral of the story: Backup isn't just an information systems function; it's a business one.

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# Computer Careers

## CLIENT/SERVER catch-up

By Ed Yourdon

A new breed of application developers has entered the client/server field in the past three to four years. They're touting new skills and asking, "Why don't old-timers know about client/server?"

But hang on to your hats. It will be difficult for all developers — newcomers and old-timers — to determine the skills they'll need to remain competitive as client/server technology spreads. It's sufficient to learn one or two things to get started, but the serious professional may need to learn a dozen related disciplines.

For example, many organizations define client/server as a relatively simple notion involving Windows and graphical user interfaces (GUI). Anyone who has worked with a modern PC will see this as an obvious skill, but it's still culture shock for developers who have spent two decades building menu-based applications with dumb terminals.

The hard part here is not the mechanics of using a screen-painting tool but the

more subtle skill of designing a really *good* user interface. In fact, too many so-called GUI applications retain the look and feel of a character-based interface.

Serious client/server developers are expected to progress far beyond simple screen-painting tools. Competency requires a working knowledge of Microsoft Corp.'s Visual Basic, Powersoft Corp.'s PowerBuilder and Gupta Corp.'s SQL-Windows.

But this also involves more than just the "mechanical" skills of learning a new language. To be competent, software professionals must change their mind-set from that of building menu-based applications to event-based ones.

Instead of the software telling users what data to enter, the application must put users in the driver's seat and let them tell the program what they want to enter.

This often means a change in methodologies. Instead of a functional-decomposition approach that uses structured analysis/design, an object-oriented ap-

It will be difficult for today's developers — newcomers and old-timers alike — to determine the skills needed to remain competitive as client/server technology continues to spread.



Ed Yourdon is the author of *Object-Oriented Systems Design* (Prentice Hall, 1994). He can be reached at yourdon@acm.org. A well-known software consultant, he is the editor of a new newsletter, "Guerrilla Programmer." For more information, contact the publisher at 74107.653@compuserve.com.

Unix, Windows, OS/2, perhaps a little DOS and Macintosh, along with Oracle Corp. and Sybase, Inc. databases and a little bit of Informix and DB2.

Perhaps the largest change, however, involves politics. Client/server technology inevitably

proach may be more appropriate.

And as soon as we mention the magic word "object," we've entered another brave new world. Now it's necessary to start learning about encapsulation, inheritance, polymorphism, Microsoft's Object Linking and Embedding, IBM's System Object Model and the Object Management Group's Common Object Request Broker Architecture. And if the client/server application involves more than just a pretty GUI front end, it may require learning "serious" object-oriented languages such as C++ or Smalltalk.

### Open to many systems

Client/server systems also impact database and network technology. This typically means a shift from a proprietary mainframe-based environment to an open environment with a hodgepodge of different hardware platforms, operating systems and middleware components.

For many old-timers, this shift is the most difficult. Experience with one hardware box or one operating system is no longer sufficient. Now we must know

means moving control from the centralized data processing empire into users' hands. And, sooner or later, application developers also find that *they* are being controlled by managers in end-user departments.

This transition can be risky. After all, what's to prevent end users from replacing those expensive old-timers with a new crop of client/server whiz kids who cost half as much? On the other hand, it creates an exciting new world for the old-timer who may be getting tired of writing programs in *any* environment.

It may also create opportunities for business process re-engineering. This, too, involves new skills, but it's where we'll see the true impact of client/server — not just sexy new interfaces, but entirely new ways of doing business.

All of this means two things: First, demand for a wide variety of client/server skills will increase. Second, application developers must accept that learning client/server skills is an ongoing process.

On the other hand, it's better than spending the rest of one's career maintaining 25-year-old Cobol programs. ■

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# Vying for vendor training

By Jill Vitiello

With a bachelor's degree in business administration and some computer courses under his belt, Martin Censullo landed his first job as a programmer. He then worked his way up to systems analyst and jumped on a new trend a dozen years ago: databases. He read about them, persuaded his employer to buy one and attended the software manufacturer's classes.

Today, he manages the database at the Massachusetts Criminal History Systems Board in Boston, an organization that tracks individuals' criminal records and delivers that information to police. It's a 24-hour, seven-day-a-week operation in which data is critical to public safety.

## Lack of formal training

While you don't want to be in Censullo's database of criminals, many database managers find themselves in his shoes: They're managing large databases with little or no formal training.

Censullo's training is typical of most. Database managers generally learn their specialty after a broad education in college or a technical school, a stint as a programmer or systems analyst and a healthy helping of self-directed education.

The preferred training comes from vendors and value-added resellers, data-

**Product-specific training is what you really need to get ahead, say database managers. The more products you know, the better. Theoretical aspects and broader issues concerning data integrity can wait.**

base managers say, and this is unlikely to change in the short term. "I got my training from the vendor from whom we buy all our hardware and software," says Sandy Thompson, database manager at LeBlanc Corp. in Kenosha, Wis., a manufacturer of musical instruments. "The classes were superior to any other training option. The vendor knows the package and provides technical support."

In fact, Greg Benedict, manager of database administration at Blue Cross/Blue Shield of California in Woodland Hills, routinely provides ongoing education for his staff of nine database administrators, especially now that the company is migrating to a client/server setup. "Training is most effective when people come back to the office and immediately use the skills they've learned," Benedict says. Currently, two of Benedict's staff are at a two-week training course.

To make yourself marketable, veterans recommend learning to work with a variety of database programs. "It's a good idea to have education and experience in three platforms: mainframe, mid-range and PC," says David Opyd, manager of database technical support at Kemper Financial Services, Inc. in Chicago. Opyd began his database management career supporting IMS on a mainframe and now works with Sybase, Inc. products in a distributed environment.

An alternative to product-specific training is industry certification. The Institute for Certification of Computing Professionals (ICCP) in Des Plaines, Ill., offers information systems professionals the Certified Computing Professional (CCP) designation. Individuals with four or more years experience in IS may take a core exam along with two more exams in computer specialties from a choice of 12.

## Getting the skills

Introduced in January, the CCP designation replaces previous designations, one of which was a certificate in data processing that had been offered by the Data Processing Management Association. The ICCP expects 2,000 IS staffers to

earn the CCP designation this year, according to Perry Anthony, executive director at the institute.

However, the certification, and those that preceded it, seem to carry little weight with database managers. "I encountered a few people with the CCP, and most of them were degree hunters," says Fin Park, database manager for San Diego County in California.

Park says his database management skills were self-taught following his formal education, which includes a bachelor's degree in Latin and Greek and a master's degree in computer science.

From what database administrators and managers can see, the future belongs to those with client/server skills, solid experience in relational databases and an open mind toward object-orient-

ed databases, even though the initial excitement about that technology has not yet been validated by many successful corporate applications.

If you're interested in getting into the field, express some interest, Park suggests. Anyone who expresses an interest at his firm is usually brought into it. "I let them become experts," he says.

Vitiello is a free-lance writer in East Brunswick, N.J.

## Tag-team training

**To train his staff of six database administrators, Fin Park, database manager for San Diego county, has used a variety of methods: vendor classes, consultants brought on site, interactive computer courses and user group seminars. However, the best approach, Park says, is a combination of methods. Park assigns each database administrator as the lead person for a distinct database. This person is responsible for becoming that database's expert. He must also cross-train the other database administrators in the product.**

### Tell us!

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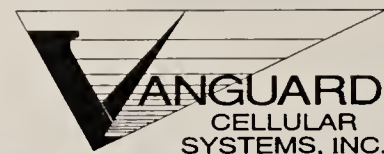
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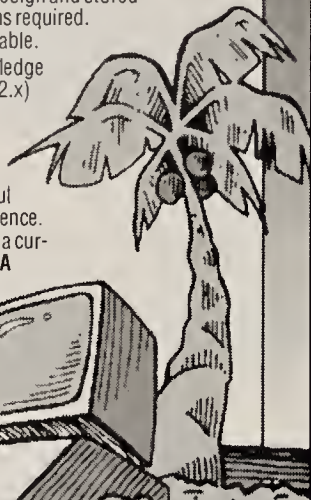


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- POWERBUILDER
- OS/2, C, PM
- RS/6000, AIX, C
- SYBASE SPECIALIST
- OS/2, C++, SQL, TCP/IP
- UNIX, C, SYBASE
- BOURNE/C SHELL, UNIX
- DB2 SPECIALIST
- ADABAS/NATURAL
- COBOL II, DB2
- VAX/VMS, C
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## Midwest Client/Server Enterprise-wide Development Opportunities

Rare Systems Group is a fast growing integration/consulting firm specializing in technology based business solutions. We are currently recruiting for the following permanent and contractor positions at our Toledo, OH location:

### Client Server Project Leaders

- These positions require 6-8 years of information systems experience including:
- 3 years working with object-oriented technologies
- 2 years of large scale project management (Sybase/Powerbuilder preferred)
- 2 years of programming

### PowerBuilder Developers

- 1-3 years of Powerbuilder experience in a production environment
- Strong understanding of Windows, database and communications technologies in a client/server environment

### Sybase DBAs and Application Analysts

- 1-3 years of database design and administration in large scale environments
- 1-2 years of triggers/stored procedure experience
- Unix experience is preferred

### Windows Technical Writers

- 2-4 years of experience with hypertext technology
- 2-4 years of experience writing user manuals

Rare Systems Group offers an excellent work environment along with a competitive salary and benefits package. For immediate and confidential consideration, please fax/send your resume and salary requirements to:



6000 West Creek Road  
Suite 9  
Independence, OH 44131  
FAX: (216) 642-0333

Resumes without salary requirements will not be considered.

ENGINEER IV (PROGRAMMER ANALYST) - Req.: B.E. or B.S. Comp. Sci. or Engrg. or Math w/2 yrs. exper. as Engineer IV (Programmer Analyst) or Systems Analyst/Consulting. Strong background in MVS/ESA, Teleprocessing Network Simulator (TPNS), Structured Translator Lang. (STL), LU 6.2, UNIX & UNIFY; & exper. in porting software across different hardware-software platforms. Duties: Develop high level application program interface (API) enabling users to talk to applications running on different hardware & software platforms. API will make use of different interplatform communication (IPC) products for message traffic. Analysis, design, development, programming & system support on IBM 30XX series mainframes & UNIX platforms. Primarily utilize MVS/ESA oper. system & UNIX; programming lang.: PL1, COBOL, 'C' & mainframe Assembler; & software prod.: CICS, DB2, IBM & UNIX utilities. Eval. of IPC products for functionalities & performance. Troubleshooting, user training & prep. of user manuals. \$45,995/yr. Job loc.: Colorado Sprgs., CO. Mail resume to: Colorado Dept. of Labor, ATTN: K. Stenzel, 600 Grant St., #900, Denver, CO 80203-3528, J.O.# CO-4382639.

## DATA BASE MANAGER ORACLE

Canon Computer Systems, Inc., a leader in the personal computer and printer industry, has an excellent opportunity for a Data Base Manager to join its Information Systems Department. You will be responsible for all aspects of our growing Oracle 7 data base environment, and will participate in numerous implementation projects currently underway. You will provide technical guidance and support for SQL\*Forms applications and Object Oriented development projects using NEXTSTEP.

Requirements include BSCS (or related field) and 5+ years of recent hands-on experience developing/supporting Oracle data base applications and 3 years of data base design and administration. UNIX and C programming. Object oriented design experience and client/server architecture a plus. Must have strong technical, management and communication skills.

We offer an attractive salary and benefits program, profit sharing, 401(k) plan and the potential for professional advancement. Send your resume to: Canon Computer Systems, Inc., Information Systems Dept., 2995 Redhill Avenue, Costa Mesa, CA, 92626. An Equal Opportunity/Affirmative Action Employer.

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IMS DB/DC APS	<b>Mainframe/Legacy</b> DB2 TELON	CICS IEF
AS 400 JD Edwards	<b>MidRange</b> COBOL HP9000	RPG III Synon
HOGAN Vector	<b>Banking</b> Systematics Shaw/M & I	Check/Image ATM/ACH/EDI

CPI offers you a choice of lucrative compensation packages including: salaried, hourly, major medical/dental/life, 401K, paid vacation/holiday, relocation, disability, paid overtime, referral bonus and more. Our customers include many of the Fortune 500, major banks and utility companies nationwide. Call or fax your resume to explore the best project and career opportunities available.

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Cpi Atlanta 500 Northpark Town Center 1100 Abernathy Road #1105 Atlanta, GA 30328 404/393-8100 404/393-8111 Fax	Cpi Tampa 11234 Park Blvd # 222 Seminole, FL 34642 813/224-9100 813/224-9144 Fax	Cpi Richmond 4198 Cox Road Suite 100 Glen Allen, VA 23060 804/755-7500 804/346-2890 Fax	



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Comdata Corporation, a national leader in electronic transaction and information processing, has an opportunity available for a Network Manager to manage our Voice and Data Communications policy across 4 call centers and our 300,000 daily point of sale transactions using relevant public switchboard services. Supervise our network managers and manage WAN and LAN policies and standards to ensure that Comdata is able to network customer located workstations into a WAN. Select and install network management software that can manage a network of thousands of nodes as well as LAN and WAN resources and tools.

The ideal candidate will have a Bachelor's degree and 7 years' experience managing both SUN, UNIX and Novell networks and other LAN managers. Experience in telecommunications processes and protocols, management of a LAN with 250+ nodes and knowledge of PC operating systems, including DOS and Windows, required.

For immediate consideration, please send your resume to: Comdata Corporation, Attn: Human Resources, Dept. NM, 5301 Maryland Way, Brentwood, TN 37027. EOE, M/F/D/V.

**Management Analyst:** Confer with & only client's needs to automate &/or modify automated procs. Gather, analyze & doc data on present procs to develop project goals & recommend impl't g procs. Det clients' syst capabilities & recommend needed chgs. Review available solutions & efficacy of opt'l procs. Train client to understand & use new process & syst. Assist with troubleshooting. Analy & eval qly of services provided to clients & det clients satisfaction & recommend improvements. Identify employees training needs. Duties require application development exp using MS-DOS, IBM MVS/CMS, MS-WINDOWS, IBM Mframes, IBM or Compatible PCs 386/486 based microcomputer, COBOL, MF-COBOL, INFORM/SQL & BASIC. Bach in Comp. Science or Mgmt plus 1 yr exp as Mgmt Analyst. Must have: comp'd 1 course or 3 crds in Statistics & Mathematics & 1 yr exp as consultant in Computer Software Consulting Industry. \$50,000/yr, 40 Hrs/wk, 9a-5p. Must have proof of legal authority to work in the United States. Send your resume to Bernard Childerston, Nebraska Department of Labor, P.O. Box 94600, Lincoln, Nebraska, 68509. Refer to Job Order NE 0117312. This advertisement is paid for by the employer.

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This list represents a small portion of the opportunities currently available.

Please send a scan quality resume to:  
**EN-DATA CORPORATION**  
P.O. BOX 2949  
SANFORD, FL 32772-2949  
PHONE: 407-323-0033  
FAX: 407-323-0685  
AMERICA ON-LINE: ENDATA1

## 1995 CORPORATE TECHNICAL RECRUITING CONFERENCE



## COMPUTERWORLD'S 1995 CORPORATE TECHNICAL RECRUITING CONFERENCE

Sunday, June 11 through Wednesday, June 14, 1995

Scanticon Conference Center, suburban Denver, Colorado

1-800-488-9204

### CONFERENCE DESCRIPTION

Want to achieve your peak professional performance in corporate Technical Recruiting? Get the best view in Colorado, where you'll discuss the challenges, issues and successes of your peers from across the nation. At this conference, you'll attend specially designed workshops, interactive discussions, breakout sessions and networking events. Plus, you'll experience the latest technology designed to increase your productivity. Best of all, you'll not only network with your peers, but you'll also interact with the very Information Systems educators who are preparing your future recruits. They'll be simultaneously attending the second annual Worldwide Conference on Information System Education (WISE), at which you can attend joint sessions that are specifically planned to build productive cooperation between industry and academia.

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The Scanticon Denver is easily accessible from Denver Airport which is located approximately 30 minutes away. Major interstate highways link The Scanticon with downtown Denver and Colorado Springs, as well as many mountain resorts. In addition to the PGA Championship Inverness Golf Course and Clubhouse, the Scanticon Denver has a multitude of recreational facilities including indoor and outdoor pools, saunas, whirlpool, exercise and aerobics studio, tennis courts, jogging trails, par course, fitness area and volleyball and basketball courts.

### TRANSPORTATION & LODGING

We are currently negotiating discount hotel, airfare, airport limousine and car rental contracts. We will supply information as it becomes available.

### CONFERENCE PROCEEDINGS

If you missed the 1994 CTRC, you will want to purchase the Conference Proceedings - a 200-page bound document containing valuable presentation information from the conference sessions, keynotes and breakouts. The price of the conference proceedings is \$49.00 + shipping.

### TO REGISTER / FOR MORE INFORMATION

Please fill out the form below and fax it to (508) 620-9430, or call our conference hotline at (800) 488-9204, Monday through Friday, 9 a.m. to 5 p.m. EST. We'll put you on our mailing list to receive all conference materials.

### PLEASE CHECK ALL THAT APPLY:

- ☐ Please register me for the 1995 Corporate Technical Recruiting Conference at \$ \_\_\_\_\_.
- ☐ Please send me the 1994 Conference Proceedings for \$49.00 + \$3.50 shipping.
- ☐ Please send me additional information on attending and/or exhibiting at CTRC'95.

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1995 CTRC Registration Fee* (per person)	1	2-5	6-10	11+
On or Before January 1, 1995	\$525	\$500	\$475	\$450
Before March 1, 1995	\$575	\$550	\$525	\$500
Before June 1, 1995	\$625	\$600	\$575	\$550

\*All payments must be received by June 1, 1995. Thank you.

## MAKE A GLOBAL IMPACT

This leading Fortune 100 company can make the future happen for you when you join our innovative information systems group. Our newly formed Object Technology Competency Center in the Boston Area is currently seeking senior-level systems professionals with the experience, creativity, enthusiasm, and ambition to create exciting new global application solutions.

### SENIOR OBJECT ANALYST/DESIGNER

To qualify, you must possess 3+ years' experience developing domain models with a leading OO method such as Booch, Rumbaugh, Jacobson, Shlaer-Mellor, and/or Martin O'Dell, together with 7+ years overall experience in analysis/design techniques using related tools. This position requires the ability to synthesize customer requirements from a variety of sources and map them to coherent technical designs. Excellent oral and written skills coupled with experience training or mentoring object analysis/design is desired. Development/delivery of OO training and formal facilitation training a plus.

### SENIOR OBJECT DEVELOPERS (PROGRAMMER)

Applicants should have 3 years' experience coding commercial applications in C++, Smalltalk, Eiffel, or CLOS, in addition to 7+ years' experience coding at the application or system level for Windows, NT and/or UNIX. Exposure to development techniques for client/server systems and service based information systems architecture is desirable. Training/mentoring experience, formal facilitation training, and proven project leadership skills are strongly preferred.

Both positions require a degree in Computer Science, MIS or Business.

We offer highly competitive salaries, comprehensive benefits and the challenges to stimulate your growth. For confidential consideration, please forward resume, salary history and indication of position desired to: **BHA BOX 185, 555 Madison Avenue, New York, NY 10022.** An equal opportunity employer.

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5545 Murray Road, Suite 300  
Memphis, TN 38119  
901-767-7550  
Fax: 901-767-9350



# Computer Careers East



Norfolk Southern Corporation is a multi-billion dollar Fortune 100 corporation and leader in the transportation industry with an information technology group located in Atlanta. Currently, we have career opportunities for degreed professionals with at least 3 years experience in the following areas:

## NORFOLK SOUTHERN

### SYBASE DBA

Internals and database administration skills and a knowledge of Replication and Open Client Servers are required.

### AIX/RS6000 SYSTEMS PROGRAMMER

A knowledge of internals, product installations and CICS/6000 is necessary.

### MVS/ESA SYSTEMS PROGRAMMER

CICS, DFSMS, RACF and ESA internals experience required.

Norfolk Southern is able to offer a competitive salary commensurate with experience and a comprehensive company-paid benefits package. Qualified candidates, send resume with cover letter including salary history to: Manager of Employment (DP/CW905), Norfolk Southern Corporation, 223 East City Hall Avenue, Suite 208, Norfolk, VA 23510, FAX: (804) 533-4318.

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**BUSINESS SYSTEM ANALYSTS - FINANCIAL and DISTRIBUTION/POINT OF SALE:** Positions support the financial/distribution and centralized procurement users, software applications, and systems. Require: 3-7 years of recent experience in client/server software system support. Bachelors in Computer Science or related field. Oracle (6.0/7.1) RDBMS background. Recent HP-UX/HP9000 experience. Good analytical, communication, teamwork, and interpersonal skills required. Client/Server systems implementation and Peoplesoft Financials/Human Resources experience are a plus. \$50,000/yr.

**SYSTEMS SPECIALIST, DATABASE ADMINISTRATION:** Responsible for the administration of relational databases across the company. Requires a minimum of four years experience in relational database administration preferably with Oracle 6 or 7. Bachelor degree in computer science or Information systems. Familiarity with TCP/IP networking, client-server applications development tools, UNIX operating system utilities and good written and oral communication skills. \$50,000/yr.

**SENIOR ANALYST - CENTRALIZED DISTRIBUTION/ORDER ENTRY SYSTEMS:** Responsible for all technical aspects in support of Business/400 Distribution software system including database administration, interfaces to other environments, and maintenance of system including modifications. Requires 3-4 years using JBA software in an AS/400 environment. Experience in working with users to define needs and implement solutions such as EDI. Good analytical, communication, teamwork, and interpersonal skills required. \$50,000/yr.

Send resumes and salary expectations to:  
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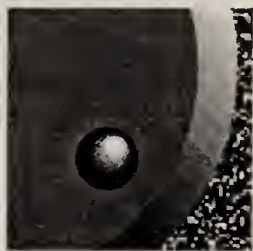
## DATA PROCESSING SKILLS NEEDED:

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ORACLE C/C++ UNIX  
TANDEM AS400  
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NOVELL PC C/S  
ADABAS/NATURAL  
POWERBUILDER

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## THE LEGACY OF OUR PAST IS THE FOUNDATION FOR OUR FUTURE

CSC Consulting was founded on the ideals of respect for the individual and the commitment to excel. Through the years, we have successfully applied methodology and structure to innovative technology solutions. Today, this legacy continues as we help our clients move to the leading edge of technology. We're currently seeking dedicated professionals to join us in offices throughout the country.

### CHIEF METHODOLOGIST

This high-profile, senior level position will lead the continued success and evolution of CSC Catalyst - our proprietary methodology for initiating, designing, implementing and managing business change for our clients worldwide.

With overall responsibility for defining the structure and content of CSC Catalyst, you must command a broad range of skills that span consulting, sales, presentation, consensus building and methodology development. Superior communication abilities are also critical, as you will interact with executives from all major CSC groups and collaborate with Catalyst architects, technical writers and subject matter experts.

Among your credentials should be methodology development experience within a big six or other major consulting firm or methodology vendor and a record of success in commercial application system development. Experience with Object Oriented techniques, CASE tools, repository and business process design is highly advantageous.

As part of our Object Oriented initiative, CSC is developing an architecture to support high volume on line transaction processing (OLTP) using Object Oriented technologies and methods. In support of this high visibility project we are seeking:

### APPLICATION ANALYST/DESIGNER

You must be a fast-learning, generalist with good hands-on technical experience. You will help define and test new Object Oriented methodologies and evaluate development environment such as Visual Works, NeXTSTEP, Forte and others. Expertise in application development for commercial information systems, desktop development. Object Oriented programming experience and an application orientation are essential.

### OBJECT ORIENTED TECHNICAL ARCHITECT

The high-level architect we seek must have a comprehensive understanding of Object Oriented, high-volume high-performance systems, transaction monitors, UNIX, OO languages and relational databases. This person must have truly superior design and implementation skills using OO technologies.

### SENIOR DESIGNER/PROGRAMMER

You will be responsible for a major portion of the custom code creation or integration for an OO Architecture. Requires extensive knowledge of OO languages, UNIX internals, and Windows API. Knowledge of Smalltalk and Tuxedo is helpful.

### SYSTEM ADMINISTRATOR

You will install and administer UNIX, Tuxedo and other software and establish connections to Windows clients. To qualify, your 3-5 years in systems administration should include some UNIX experience. Knowledge of Tuxedo administration and C programming is preferred.

### DATABASE ADMINISTRATOR

Working with relational databases used in the OO Initiative, you'll be responsible for all aspects of physical database administration, including creation, backup, recovery and tuning. Your experience, which need not be extensive, should include DBA responsibility using a UNIX database; Oracle experience is a plus.

*Our Newton Lower Falls, MA location is looking for the following professionals:*

### CLIENT SERVER SPECIALISTS

The Systems Architects and Applications Developers we seek must have solid experience with some of these technologies:

- C
- PowerBuilder
- Sybase
- Windows
- Visual Basic
- C++
- Oracle
- Progress
- UNIX

**Systems Architects** - must have at least 10 years' experience in designing, developing and deploying the overall system architecture for mission critical client/server business applications. You will work closely with applications and data architects, ensuring that all technical solutions support business needs. You will also drive the component selection process, provide technical leadership and leverage the experience of supporting technology and tool specialists.

**Applications Developers** - must have 2-8 years' experience developing commercial business applications. Experience in a client/server and/or Object Oriented environment is essential.

At CSC Consulting, our legacy of uncompromising commitment extends to our employees as we offer competitive compensation, comprehensive benefits which include health, dental, a qualified 401(k), and company performance plans, as well as exceptional professional training and advancement potential.

If you're ready to build your future on our foundation, please send your resume to: **John Nyhan, Director of Recruiting, CSC Consulting, One University Office Park, Waltham, MA 02154.** Or for the Newton Lower Falls positions, please send resume to: **Patricia A. Bleehen, Dept. CW, CSC Consulting, One Newton Executive Park, Newton Lower Falls, MA 02162-2864. FAX: (617) 332-2864.** We are an equal opportunity employer M/F/D/V.

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## SOFTWARE DEVELOPMENT ENGINEERS (Non-Defense Industry)

YORK International Corporation, a world leader in the HVAC and Refrigeration fields, profitable and growing, has several opportunities for experienced Software Development Engineers.

Successful candidates will be responsible for developing engineering/scientific application programs that support the design, engineering and marketing of commercial HVAC products. Projects may include new application development as well as re-engineering of several existing products. Candidates must have programming experience in "C" or FORTRAN in a PC or UNIX environment. Experience in "C++" is preferred; and experience in Windows 3.1 GUI development, thermodynamics or aerothermodynamics is desirable. A.B.S. degree in engineering, computer science, or equivalent is required.

These positions, located in York, PA - an attractive southeast Pennsylvania community - offer excellent growth opportunity in a professional environment utilizing state-of-the-art equipment including Sun Work Stations. Compensation will be based on level and applicability of experience, and a full line of benefits include relocation assistance.

Interested candidates should submit resume and salary requirements to our consultant: **James Strong, Vice President, Joseph Chandler & Associates, Inc., 4624 Belmont Park Terrace, Nashville, TN 37215-4418. Phone (615) 296-2209, Fax (615) 966-3195.**



## East

## We're Expanding Our Sales Force.

Due to unprecedented growth as the trendsetter in the industry standard of client/server architecture, SYBASE is actively seeking to hire technical sales professionals in the following locations: New York, New Jersey, Boston, Burlington, Bethesda, Atlanta Tampa, Cincinnati, Chicago, Cleveland, Philadelphia, Charlotte, Detroit and Minneapolis.

### SALES REPRESENTATIVES (Commercial & Federal)

#### Responsibilities:

- Market and sell the full range of SYBASE products and professional services
- Develop new business
- Travel to customer sites in order to assess problems and needs
- Conduct sales presentations

#### Requirements:

- Five years experience in selling solution software
- Proven track record of overachievement of quota
- Strong technical aptitude
- Excellent organizational and presentation skills

### BUSINESS PARTNERS SALES MANAGERS (Commercial & Federal)

#### Responsibilities:

- Market and sell the full range of SYBASE products and professional services through systems integrators and resellers
- Develop overall contractor/integrator strategy, action plan and execution to achieve revenue goals
- Travel to customer sites in order to develop mindshare, marketing and training efforts within accounts
- Conduct sales presentations at Executive, Middle Management and Technical levels

#### Requirements:

- Five years of high technology channel sales experience
- Proven performance in a solution software sales environment
- Strong team player attitude with ability to work effectively with other SYBASE sales groups
- Excellent organizational and presentation skills



The Enterprise Client/Server Company TM

### TELESALES-ACCOUNT EXECUTIVES

#### Responsibilities:

- Inside sales of the SYBASE RDBMS
- Selling through direct and alternate channels to the Commercial and Federal sector
- Manage information provided through marketing information systems and programs

#### Requirements:

- Minimum of 2 years software sales experience
- Knowledge of RDBMS, tools, UNIX, and/or NLM products
- A track record of overachievement of quota for at least four years

(Positions available in Burlington, MA only)

### SYSTEMS CONSULTANTS

#### Responsibilities:

- Technically qualify and help close sales opportunities
- Deliver pre-sales technical support

#### Requirements:

- At least five years experience in a sales or application development environment
- A working knowledge of UNIX, PC's, networking, programming languages, GUI tools and 4GL relational databases
- Experience doing customer presentations and troubleshooting

SYBASE offers an excellent compensation plan as well as a comprehensive, cafeteria-style benefits package. For immediate consideration, fax or mail your resume to: SYBASE, 6550 Rock Spring Dr., Bethesda, MD 20817, Attn: Cindy Roemer, FAX: (301) 897-1605. Principals only, please. Equal Opportunity Employer/Affirmative Action.



TSG Technical Services, a division of The Systems Group, Inc., provides quality computer consulting services for clients with

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- Systems Design & Integration
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(800) 959-4TSG  
(404) 633-0646  
(404) 633-7765 (fax)

### Client/Server Developer

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### Sr. Network Consultants

NetWare • UNIX • LAN Manager

### Programmer Analysts

DB2 • CICS • COBOL

CGI Systems, Inc., an IBM Company, is a leading client/server systems integrator offering a host of challenging assignments with leading firms in the Midatlantic, Northeast and Southeast.

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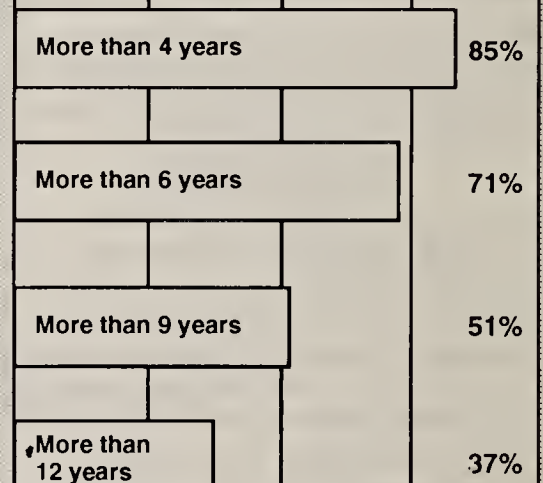
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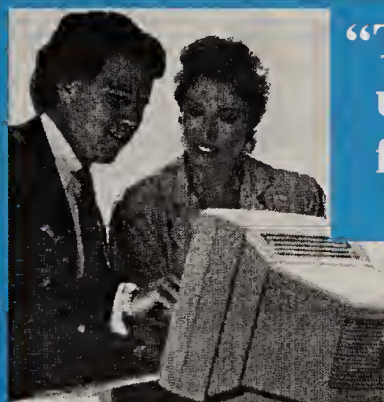
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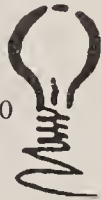
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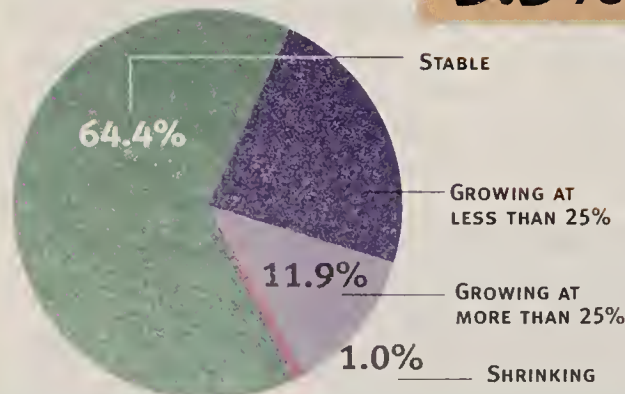
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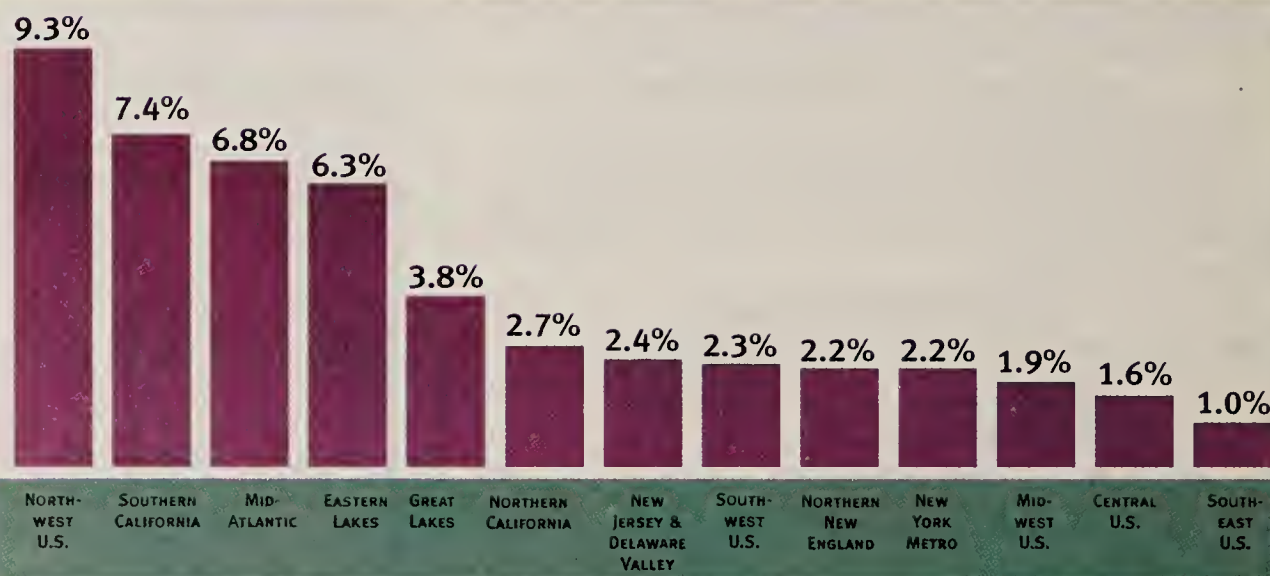
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# Marketplace

## Net sales

**It's possible to make a killing by selling products over the Internet, but only when you stick to the rules**

By Bronwyn Fryer

Ask anyone at Id Software, Inc. about using the Internet as a sales vehicle, and they'll give you an earful. Consider this: The weekend that the 10-person, Mesquite, Texas-based game developer put the first episode of "Doom" on the Internet's ftp.uwp.edu site, several thousand users downloaded some 10G bytes' worth of the cliff-hanging game.

Each person who downloaded Doom paid a \$50 fee, so Id didn't do too badly for a weekend's work. To date, the company has sold approximately \$10 million worth of software, most of it through the Internet, all while avoiding the overhead costs that can eat up profits.

Consider also the case of Digital Equipment Corp., whose creation of a Mosaic storefront on the World-Wide Web similarly resulted in \$10 million in revenue for the company. The firm, which also runs its own news group,

is improving customer support and curbing costs by providing on-line support to Internet users.

Similar stories of marketing and sales successes via the Internet abound. Among large and small firms, ranging from the likes of IBM, The Santa Cruz Operation, Dell Computer Corp., Sun Microsystems, Inc. and Adobe Systems, Inc. to one-person start-ups, it is now de rigueur to create a presence on the gigantic network.

For buyers, the benefit of buying services or products via the Internet is twofold: It's faster than traditional mail order, and technical support forums often offer advice not found in manuals and eliminate time spent on hold with telephone customer support.

### Rules of the road

Yet finding buyers through the Internet is not quite like shooting fish in a barrel. Rather, it demands scrupulous adherence to so-called "netiquette."

"We see other 'net users as our best friends," says Jay Wilbur, Id Software's business manager. "If you don't show the highest respect for 'net users, your name will be mud."

Mud is now a euphemistic alias for the Arizona law firm of Canter and Seigel, whose flagrant and well-documented violation of netiquette is the focus of a dedicated and furious discussion group.

Rather than post an announcement of its immigration law services in special interest areas where the information might have been welcomed, the firm mass-posted an announcement in every conceivable location. As a result, it received angry electronic mail, including several death threats, from more than 50,000 Internet users.

To date, "no service provider will carry the Canter and Seigel account," says Michael Strangelove, publisher of "Internet Business Journal" in Ottawa.

Lately, the Internet in-

## Selling your wares over the Internet is not exactly cheap.

Most firms pay anywhere from

\$50,000 to \$100,000 to set up

dedicated hardware and software

for an Internet server and hire a

full-time maintenance staff.

Additional costs for network band-

width can run \$2,000 per month.

And many companies, rather than

risk an Internet faux pas, will

hire the services of firms, such

as National Response Corp. in

Texas, that charge from \$200 to

\$400 a month to help establish

a presence and locate applicable

new groups.



### Know the rules

Traditional marketing methods don't work. In traditional advertising the product goes to the prospect. In Internet advertising the prospect shops for the product. Moreover, material placed on the Internet must be strictly useful and informational, as well as carefully placed in the most appropriate discussion groups, news groups or other areas.

creasingly resembles commercial on-line services such as CompuServe and America Online. "There's no question that as bandwidth increases, more and more companies will be running graphical storefronts on the Internet," says Jeffrey Dearth, president of the *New Republic* magazine and founder of Electronic Newsstand, a firm that helps companies market products over the Internet.

Not surprisingly, most of the companies offering wares over the wire are solidly in the high-tech arena. Software firms most frequently offer sample products and provide answers to users' questions. Hardware firms frequently publish technical specifications for their products; some, such as Digital, even allow users to test products over the 'net.

Although many companies are anxious to establish Mosaic-based "Home Pages" akin to graphical electronic storefronts on the World-Wide Web section of the Internet, it remains more efficient and lucrative to establish a less glitzy presence through the creation of discussion areas or news groups.

Because most of the 25 million to 50 million users of the Internet use vanilla E-mail sans Mosaic, "businesses should not rush out and create a Home Page," Dearth warns. "You will only reach a small slice of the pie because only a few people can make Mosaic hum."

Small businesses can sell their wares perfectly well by taking a howdy-neighbor approach through postings to proper groups.

The key to selling successfully via the Internet is to have a thorough understanding of the rules. That means a paradigm shift away from traditional marketing, Internet experts say.

In addition, because working over the 'net is more like traditional person-to-person networking, the quality of the information offered and the credibility of the group or individual doing the offering is everything.

"The best way to market on the 'net is to become a patron of the Internet community by providing useful information that people who share your interests really want," Strangelove suggests. "For example, if you're a company that sells sports gear, post the latest hockey scores."

Fryer is a free-lance writer in Boulder Creek, Calif.

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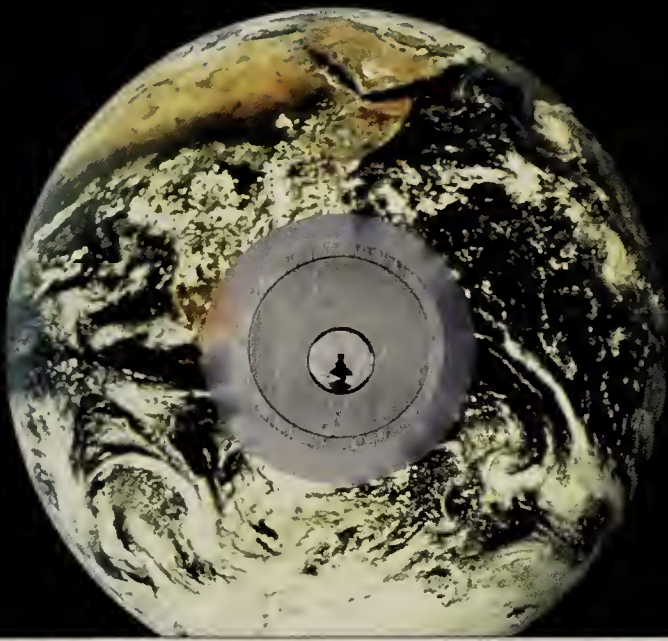
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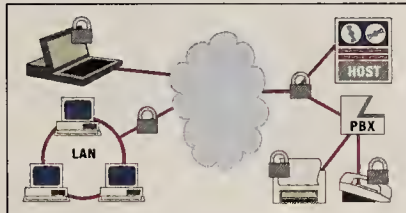


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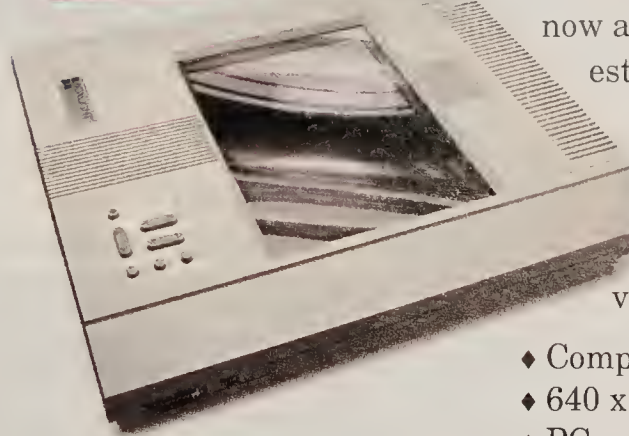
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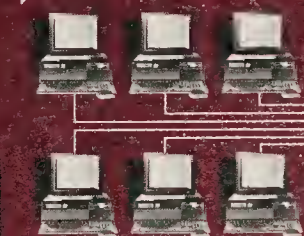
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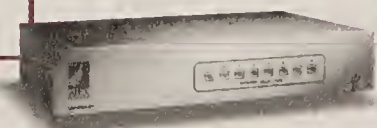
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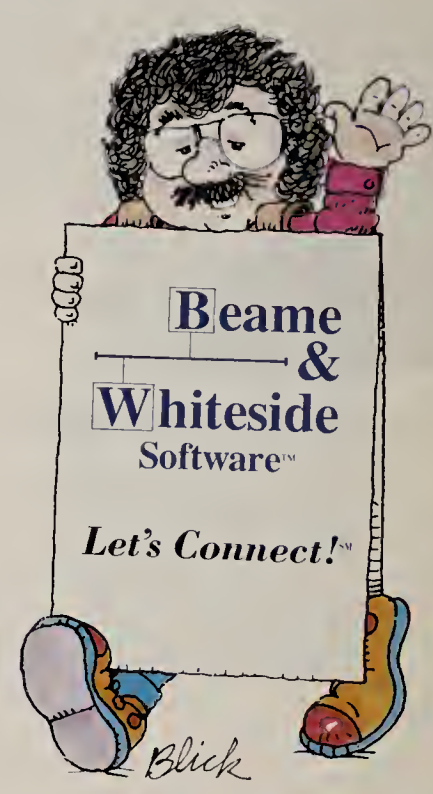
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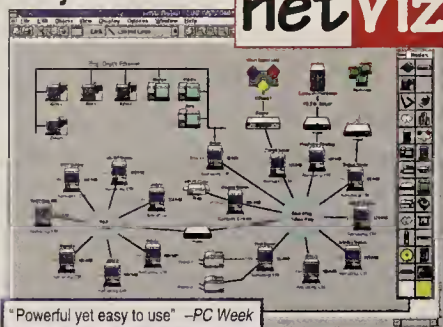
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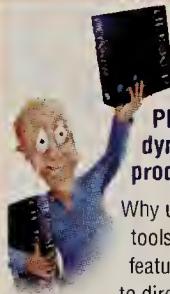
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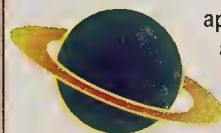
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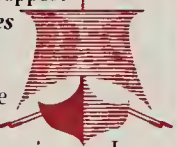
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Performance Computing, Inc. .... 1  
Perlin Associates ..... 20  
Plasmon Data Systems, Inc. .... 63  
Platinum Technology, Inc. .... 8,61  
PowerOpen Association, Inc. .... 32  
Powersoft Corp. .... 28,100  
Probe Research, Inc. .... 64  
Prodigy Services Co. .... 16  
Prudential Insurance Co. .... 1

## R

Recognition Equipment, Inc. .... 28  
Retix, Inc. .... 8  
Robertson, Stephens & Co. .... 7  
Ross Systems, Inc. .... 32

## S

Salomon Brothers, Inc. .... 10,20  
SAP AG ..... 1,64  
Sharp Corp. .... 41  
Sherpa Corp. .... 50  
Society for Information  
Management ..... 20  
Software Publishing Corp. .... 40,41  
Sony Corp. .... 8,39  
Sprint Corp. .... 32  
Square D Co. .... 50  
Square One ..... 53  
Sterling Software, Inc. .... 8  
Subtle Software, Inc. .... 79  
Sued-Data GmbH ..... 64  
Sueddeutsche Zeitung ..... 64  
Sueddeutscher Verlag ..... 64  
Sun Microsystems, Inc. .... 1,4,8,10,76,118  
SunSoft, Inc. .... 10  
SunTrust Banks, Inc. .... 61,68  
Sybase, Inc. .... 63,101  
Symantec Corp. .... 32,41,129  
Synernetics, Inc. .... 16  
Syntax, Inc. .... 10

## T

Talarian Corp. .... 79  
Texas Instruments, Inc. .... 41  
The Boeing Co. .... 8  
The Home Insurance Co. .... 40  
The Santa Cruz Operation ..... 8,118  
The Trane Co. .... 40  
The Yankee Group ..... 16,63  
ThunderByte ..... 43  
Timexpress ..... 83  
Tivoli Systems, Inc. .... 8  
Toshiba Corp. .... 40  
Traveling Software, Inc. .... 32,129  
Tricord Computer Corp. .... 47

## U

U.S. Robotics, Inc. .... 41  
U.S. Tennis Association ..... 12  
US West Communications ..... 16  
UniForum Association, Inc. .... 8  
Union Shipping ..... 42  
Unisys Corp. .... 40,64  
United Grain Growers Ltd. .... 63  
United Services  
Automobile Association ..... 40  
University of Michigan ..... 24  
USAir ..... 28

## V

Versant Object Technology ..... 79  
Visual Numerics, Inc. .... 79  
VLSI Technologies, Inc. .... 39

## W

W. W. Grainger, Inc. .... 40  
Wall Data, Inc. .... 53  
Wang Laboratories, Inc. .... 28  
Waseana Marketing ..... 76  
Wehrheim Systems, Inc. .... 47  
Wellfleet Communications, Inc. .... 15  
Western Digital, Inc. .... 41  
WordPerfect ..... 32,40  
WorkGroup Technologies, Inc. .... 1  
Wyse Technology, Inc. .... 10

## X

X/Open Co. .... 8  
XyLAN, Inc. .... 15

## Z

Zenith Data Systems ..... 4,16,47



## Gainers

## Losers

### Percent

NETRIX CORP.	35.3	KNOWLEDGEWARE INC.	-46.6
INTERLEAF INC.	35.2	AST RESEARCH INC.	-21.3
AMDAHL CORP.(H)	29.0	4TH DIMENSION	-16.7
COMPUSA INC.	21.8	EASEL CORP.	-15.6
SOFTWARE PUBLISHING CORP.	20.0	ROSS SYSTEMS	-14.3
RACOTEK INC.	17.2	TELEBIT CORP.	-13.0
PRINTRONIX INC.(H)	13.8	SEQUOIA SYSTEMS INC.	-12.8
IOMEGA CORP.	13.8	VLSI TECHNOLOGY	-11.7

### Dollar

IMRS(H)	3.75	TEXAS INSTRUMENTS	-6.63
PRINTRONIX INC.(H)	2.25	8MC SOFTWARE INC.	-5.25
AMDAHL CORP.(H)	2.25	ITT CORP.	-5.13
OPTICAL DATA SYSTEMS INC.	1.88	MICRON TECHNOLOGY	-4.50
GENERAL DATACOMM INDS.(H)	1.63	AST RESEARCH INC.	-3.63
DSC COMMUNICATIONS	1.61	COMPAQ COMPUTER CORP.	-3.50
CENTIGRAM COMMUNICATIONS	1.50	PEOPLESFT	-3.50
COMPUSA INC.	1.50	KNOWLEDGEWARE INC.	-3.44

## Industry Almanac

## Multimedia scramble

Although multimedia is a booming sector of the computer industry, as the technology matures, stock market analysts remain wary of companies focused in this area. "They are seen as volatile companies," said Neeraj Vohra, an analyst at Wheat First Butcher & Singer in Richmond, Va. "Everyone takes it for granted that multimedia is a hot growth area. The question is, which are the players that will take advantage of it, and who will be left behind?"

A good example is **Cirrus Logic, Inc. (CRUS)**, a leader in graphics and audio chips, that has taken strides to transform itself from a hard-drive controller company into a multimedia concern. The company has skilled, aggressive management, has purchased smaller companies and has taken advantage of the technology, Vohra said.

While the company's purchases have expanded its technologies, they have also made its stock more volatile, according to Raj Rajaratnam, an analyst at Needham & Co. in New York. He noted that the stock has rewarded the nimble trader more than the long-term investor. Historically, buying stock when uncertainties are great and selling when things are stable has been a successful investment strategy.

With multimedia still emerging in the industry, those firms translating their technology into market standards stand a good chance of succeeding. "The market is rapidly evolving; there are no standards yet," Vohra said. "A lot have high risk, and a lot have high growth. If one becomes the de facto standard they could be the next Microsoft."

—Tim Ouellette

## Multimedia players

THOUGH SHARES IN THE MULTIMEDIA MARKET ARE VERY VOLATILE, MANY FIRMS ARE CURRENTLY TRACKING NEAR THEIR 52-WEEK HIGHS AND HOLD PROMISE FOR LONG-TERM SUCCESS

COMPANY	PRODUCT TYPE	SEPT. 1 PRICE	HIGH/LOW RANGE
Avid Technology, Inc.	Digital video equipment	33 <sup>1</sup> / <sub>4</sub>	35 16
Broderbund Software, Inc.	Interactive software	55 <sup>1</sup> / <sub>2</sub>	59 <sup>1</sup> / <sub>4</sub> 31 <sup>1</sup> / <sub>2</sub>
C-Cube	Video compression chips	23 <sup>1</sup> / <sub>4</sub>	24 <sup>3</sup> / <sub>4</sub> 15
Creative Technologies, Inc.	Sound cards graphics/audio	18 <sup>1</sup> / <sub>16</sub>	24 8 <sup>3</sup> / <sub>4</sub>
Cirrus Logic, Inc.	Workstations, digital/audio	27 <sup>5</sup> / <sub>8</sub>	44 <sup>5</sup> / <sub>8</sub> 23 <sup>7</sup> / <sub>8</sub>
Digidesign, Inc.	Workstations	18 <sup>3</sup> / <sub>4</sub>	19 10
Macromedia, Inc.	Multimedia authoring tools	13	21 7 <sup>1</sup> / <sub>2</sub>
Silicon Graphics, Inc.	Interactive TV, film, games	26 <sup>1</sup> / <sub>4</sub>	26 <sup>7</sup> / <sub>8</sub> 18
The Learning Co.	Educational software	17 <sup>1</sup> / <sub>2</sub>	20 <sup>3</sup> / <sub>4</sub> 11 <sup>1</sup> / <sub>4</sub>

EXCH	52-WEEK RANGE			SEPT. 2 3 PM			WK NET	WK PCT	CHANGE	EXCH	52-WEEK RANGE			SEPT. 2 3 PM			WK NET	WK PCT	CHANGE
Communications and Network Services										UP 1.24%									
OTC	34.56	12.06	3 COM CORP.	33.23	0.67	2.1	OTC	18.75	2.25	KNOWLEDGEWARE INC.	3.94	-3.44	-46.6						
NYS	45.56	36.25	AMERITECH CORP.	41.25	0.38	-0.9	OTC	34.75	17.50	LEGENT CORP.	23.00	0.88	4.0						
NYS	62.75	49.50	AT&T	54.75	-0.13	-0.2	OTC	86.50	29.75	LOTUS DEVELOPMENT	40.75	-3.00	-6.9						
OTC	26.50	12.75	BANYAN SYSTEMS INC.	16.88	0.88	5.5	OTC	18.00	6.00	MAGIC SOFTWARE ENTERPRISES	9.75	-0.50	-4.9						
NYS	69.13	49.00	BELL ATLANTIC CORP.	54.25	-0.63	-1.1	OTC	18.50	6.00	MANUGISTICS GROUP INC.	9.88	0.88	9.7						
NYS	63.88	53.00	BELLSOUTH CORP.	58.75	-0.50	-0.8	OTC	7.50	1.44	MATHSOFT	2.00	0.00	0.0						
NYS	21.50	8.38	BOLT, BERANEK & NEWMAN	16.13	0.13	0.8	OTC	11.25	4.50	MCAFFEE ASSOCIATES	9.00	0.00	0.0						
OTC	15.75	9.00	BROOKTROUT TECHNOLOGY	10.00	-0.50	-4.8	OTC	17.25	9.25	MENTOR GRAPHICS	9.88	-0.50	-4.8						
NYS	132.50	82.63	CABLETRON SYSTEMS	103.75	-2.00	-1.9	OTC	29.25	11.50	MICRO FOCUS	12.88	-0.38	-2.8						
OTC	43.00	10.00	CENTIGRAM COMMUNICATIONS	15.00	1.50	11.1	OTC	11.63	4.63	MICROGRAFX INC.	5.50	0.38	-6.4						
OTC	60.25	31.50	CHIPCOM CORP.	53.50	-0.25	-0.5	OTC	58.50	36.63	MICROSOFT CORP. (H)	55.88	-1.00	-1.8						
OTC	40.75	18.75	CISCO SYSTEMS INC.	24.69	-0.56	-2.2	OTC	44.38	23.81	MICROSOFT CORP. (H)	55.88	-1.00	-1.8						
OTC	18.38	9.25	COMPRESSION LABS INC.	10.63	-0.50	-4.5	OTC	44.75	21.50	ORACLE CORP.	41.63	-2.00	-4.6						
OTC	12.38	5.13	COMPUTER NETWORK TECH.	6.63	0.02	0.2	OTC	24.50	13.38	PARAMETRIC TECHNOLOGY	26.63	-1.88	-6.6						
OTC	33.75	8.50	CROSSCOMM	9.38	-0.13	-1.3	OTC	48.25	26.00	PARCPLACE SYSTEMS INC.	22.00	-1.25	-5.4						
OTC	3.00	1.50	DATA SWITCH CORP.	2.44	0.06	2.6	OTC	6.25	3.50	PEOPLESFT	43.25	-3.50	-7.5						
OTC	36.56	17.88	DSC COMMUNICATIONS	28.63	1.61	6.0	OTC	69.50	24.25	PHOENIX TECHNOLOGIES	5.38	0.25	4.9						
NYS	21.13	8.25	GENERAL DATACOMM INDS. (H)	21.13	1.63	8.3	OTC	39.75	3.50	POWERSOFT	43.25	1.00	2.4						
NYS	39.88	29.50	GTE CORP.	31.63	-0.38	-1.2	OTC	17.13	7.25	PLATINUM SOFTWARE	6.50	0.00	0.0						
NYS	95.97	78.63	ITT CORP.	81.00	-5.13	-6.0	OTC	60.25	27.00	PLATINUM TECHNOLOGY	15.56	-0.56	-3.5						
OTC	29.63	21.38	MCI COMMUNICATIONS CORP.	24.38	0.25	1.0	OTC	4.13	1.94	PROGRESS SOFTWARE CORP.	33.00	-0.25	-0.8						
OTC	8.25	1.88	MICROCOM INC. (H)	7.63	-0.13	-1.6	OTC	28.25	9.50	QUARTEROCK OFFICE SYS.	2.31	-0.13	-5.1						
OTC	23.50	11.25	NETMANAGE INC.	18.63	0.13	0.7	OTC	10.88	3.38	RAINBOW TECHNOLOGIES INC.	12.88	1.25	10.8						
OTC	7.25	4.00	NETRIX CORP.	5.75	1.50	35.3	OTC	14.50	2.88	RASTEROPS	4.13	0.00	0.0						
OTC	8.75	3.50	NETWORK COMPUTING DEVICES	3.88	0.13	3.3	OTC	28.75	2.75	ROSS SYSTEMS	3.75	-0.63	-14.3						
NYS	13.88	7.38	NETWORK EQUIPMENT TECH. (H)	13.88	1.13	8.8	OTC	14.63	9.75	SAPIENS INTL. CORP. N.V.	3.25	0.13	4.0						
OTC	23.38	11.50	NETWORK GENERAL	19.75	0.13	0.6	OTC	8.63	3.00	SOFTKEY INTERNATIONAL INC.	12.88	0.13	1.0						
OTC	9.63	6.38	NETWORK SYSTEMS CORP.	8.25	-0.75	-8.3	OTC	13.75	5.00	SOFTWARE PUBLISHING CORP.	4.50	0.75	20.0						
OTC	72.25	26.50	NEWBRIDGE NETWORKS CORP.	30.75	-0.75	-2.4	NYS	35.63	21.75	STATE OF THE ART	7.00	-0.75	-9.7						
NYS	36.00	23.75	NORTHERN TELECOM LTD. (H)	34.63	-1.13	-3.1	OTC	20.13	6.88	STERLING SOFTWARE INC.	29.75	1.50	5.3						
OTC	26.63	13.38	NOVELL INC.	15.50	0.00	0.0	OTC	57.00	25.75	STRUCT. DYNAMICS RESEARCH	8.13	-0.25	-3.0						
NYS	48.88	33.25	NYNEX CORP.	38.38	0.25	0.7	OTC	20.50	9.88	SYBASE INC.	45.00	-0.13	-0.3						
OTC	30.00	15.50	OCTEL COMMUNICATIONS CORP.	23.50	1.00	4.4	OTC	52.75	33.00	SYMANTEC CORP.	13.19	-0.81	-5.8						
OTC	18.13	9.00	OPTICAL DATA SYSTEMS INC.	18.13	1.88	11.5	OTC	18.00	11.75	SYNOPSYS	40.50	-2.00	-4.7						
OTC	7.50	3.13	PENRIL DATA COMM NETWORKS	3.75	-0.25	-6.3	OTC	6.75	3.25	SYSTEM SOFTWARE ASSOC.	14.50	0.75	5.5						
OTC	20.75	10.00	PICTURETEL CORP.	15.25	0.13	0.8	OTC	30.00	11.75	TRINZIC CORP.	3.44	-0.06	-1.8						
OTC	8.25	2.13	PROTEON INC.	3.63	0.25	7.4	OTC	23.25	12.00	VIEWLOGIC SYSTEMS	18.00	0.25	1.4						
OTC	14.38	2.75	RACOTEK INC.	4.69	0.69	17.2	OTC	13.25	6.00	VMARK SOFTWARE INC.	20.00	0.00	0.0						
NYS	44.75	24.88	SCIENTIFIC ATLANTA INC. (H)	43.88	-0.25	-0.6	OTC	60.00	24.75	WALKER INTERACTIVE SYSTEMS	9.25	0.00	0.0						
NYS	47.00	36.75	SOUTHWESTERN BELL CORP.	41.38	-0.38	-0.9	OTC	60.00	24.75	WALL DATA INC.	38.00	-2.00	-5.0						
NYS	40.25	31.38	SPRINT CORP.	39.13	0.38	1.0	Semiconductors										OFF 4.69%		
OTC	26.75	13.38	STANDARD MICROSYSTEMS CORP.	19.50	1.25	6.8	NYS	31.75	16.75	ADVANCED MICRO DEVICES	27.88	-1.50	-5.1						
OTC	42.75	11.50	STRATACOM INC.	37.75	-3.25	-7.9	NYS	32.88	19.38	ANALOG DEVICES INC. (H)	31.63	0.25	0.8						
OTC	33.75	13.13	SYNOPTICS COMMUNICATIONS	15.88	-0.13	-0.8	OTC	29.63	10.94	ATMEL CORP.	26.88	-3.00	-10.0						
OTC	15.25	3.88	TELEBIT CORP.	5.00	-0.75	-13.0	OTC	7.50	3.63	CHIPS AND TECHNOLOGIES	4.13	-0.13	-2.9						
OTC	46.00	23.00	US ROBOTICS	33.50	-1.25	-3.6	OTC	44.63	23.88	CIRRUS LOGIC	27.63	-1.38	-4.7						
NYS	50.75	38.25	US WEST INC.	40.25	0.13	0.3	NYS	20.00	11.25	CYPRESS SEMICONDUCTOR CORP.	18.63	-1.13	-5.7						
OTC	43.88	18.75	WELLFLEET COMMUNICATIONS	23.00	-0.13	-0.5	NYS	20.13	13.00	DALLAS SEMICONDUCTOR	15.50	-0.38	-2.4						
OTC	28.25	12.75	XIRCOM	19.00	-0.75	-3.8	OTC	27.75	14.75	INTEGRATED SILICON SYSTEMS	25.00	0.25	1.0						
OTC	23.00	13.25	XYLOGICS INC.	21.50	-0.50	-2.3	OTC	74.50	55.88	INTEL CORP.	64.00	-1.75	-2.7						
OTC	29.25	11.25	XYPLEX INC.	18.50	1.25	7.2	NYS	32.88	13.00	LSI LOGIC CORP. (H)	30.00	-0.75	-2.4						
PCs and Workstations										OFF 3.63%									
OTC	7.50	2.63	ADVANCED LOGIC RESEARCH	4.50	0.25	5.9	OTC	26.75	12.25	LATTICE SEMICONDUCTOR	18.13	-1.88	-9.4						
OTC	38.50	22.00	APPLE COMPUTER INC.	35.25	-0.38	-1.1	NYS	44.88	15.16	MICRON TECHNOLOGY	39.50	-4.80	-10.2						
OTC	33.00	12.50	AST RESEARCH INC.	13.38	-3.63	-21.3	NYS	55.75	42.13	MOTOROLA INC.	52.25	-2.88	-5.2						
NYS	39.88	17.50	COMPAQ COMPUTER CORP.	35.38	-3.50	-9.0	NYS	25.00	14.38	NATIONAL SEMICONDUCTOR	17.38	-1.88	-9.7						
OTC	36.50	15.13	DELL COMPUTER CORP.	32.38	-2.25	-6.5	OTC	12.13	6.75	SIERRA SEMICONDUCTOR	11.00	-0.50	-4.3						
OTC	25.00	9.25	GATEWAY 2000 INC.	14.13	-0.88	-5.8	NYS	89.50	55.75	TEXAS INSTRUMENTS	76.00	-6.63	-8.0						
NYS	93.63	64.38	HEWLETT PACKARD CO.	88.63	-0.50	-0.6	OTC	18.88	9.38	VLSI TECHNOLOGY	13.25	-1.75	-11.1						
NYS	26.88	18.00	SILICON GRAPHICS	25.50	0.38	1.5	OTC	14.38	2.88	WEITEK (L)	3.25	0.13	4.0						
OTC	31.38	18.25	SUN MICROSYSTEMS INC.	26.56	-0.56	-2.1	ASE	20.38	4.63	WESTERN DIGITAL CORP.	14.63	-0.75	-4.9						
NYS	50.75	30.75	TANDY CORP.	41.38	1.13	2.8	OTC	59.75	29.00	XILINX	43.50	-3.00	-6.5						
OTC	5.13	2.38	ZEOS INTERNATIONAL LTD.	3.19	-0.13	-3.8	OTC	40.75	26.50	ZILOG INC.	33.25	0.50	1.5						
Large Systems										OFF 1.15%									
ASE	10.00	4.38	AMDAHL CORP. (H)	10.00	2.25	29.0	Peripherals and Subsystems										OFF 0.33%		
NYS	7.63	4.13	CONVEX COMPUTER	6.50	-0.50	-7.1	OTC	30.50	14.50	AMERICAN POWER CONVERSION	18.75	-1.00	-5.1						
OTC	4.50	0.50	CRAY COMPUTER	1.63	-0.19	-10.3	OTC	25.00	18.25	BANCTEC INC.	25.00	1.50	6.4						
NYS	33.75	19.13	CRAY RESEARCH INC.	21.50	0.63	3.0	OTC	7.75	3.25	CAMBEX CORP.	4.63	0.00	0.0						
NYS	10.75	6.63	DATACORP.	9.50	1.13	13.4	ASE	7.38	1.88	COGNITRONICS CORP.	2.50	0.00	0.0						
NYS	43.13	18.25	DIGITAL EQUIPMENT CORP.	24.25	-0.50	-2.0	NYS	20.50	9.00	CONNER PERIPHERALS	11.75	-0.25	-2.1						
OTC	6.38	2.38	ENCORE COMPUTER CORP.	4.00	-0.31	-7.2	OTC	24.00	8.75	CREATIVE TECHNOLOGIES INC.	17.75	-0.38	-2.1						
NYS	52.25	39.63	HARRIS CORP.	48.25	0.25	0.5	OTC	14.00	3.50	DATA RACE INC.	4.75	-0.13	-2.6						
NYS	70.13	41.25	IBM	67.13	-2.63	-3.8	ASE	10.75	4.13	DATARAM CORP.	5.25	-0.38	-6.7						
OTC	18.75	7.75	NETFRAME	9.50	-0.50	-5.0	NYS	23.00	12.38	EMC CORP.	17.75	-0.38	-2.1						
OTC	26.00	3.88	PARALLAN COMPUTER	4.38	0.00	0.0	OTC	9.00	3.13	EMLUX CORP. (H)	8.88	0.00	0.0						
OTC	22.00	5.38	PYRAMID TECHNOLOGY	8.00	-0.69	-7.9	OTC	21.00	11.75	EVANS & SUTHERLAND	12.25	-0.50	-3.9						
OTC	20.00	11.13	SEQUENT COMPUTER SYS.	17.63	1.13	6.8	OTC	22.50	8.75	EXABYTE	18.00	-0.75	-4.0						
OTC	6.84	2.19	SEQUOIA SYSTEMS INC.	4.69	-0.69	-12.8	OTC	34.00	2.63	INTELLIGENT INFO. SYSTEMS	3.69	-0.06	-1.7						
NYS	38.63	22.88	STRATUS COMPUTER INC.	37.50	-0.38	-1.0	OTC	4.38	2.00	IOMEGA CORP.	2.84	0.34	13.8						
NYS	16.38	9.50	TANDEM COMPUTERS INC.	14.63	-0.75	-4.9	OTC	9.75	3.00	IPL SYSTEMS INC.	3.50	-0.38	-9.7						
OTC	30.00	3.88	TRICORD SYSTEMS	5.50	-0.38	-6.4	OTC	28.50	13.75	KOMAG INC.	23.25	-0.25	-1.1						
NYS	16.50	8.63	UNISYS CORP.	9.63	-0.50	-4.9	OTC	8.63	4.25	MAXTOR CORP.	4.75	0.00	0.0						
Software										OFF 1.44%									
OTC	34.50	16.25	ADOBE SYSTEMS INC.	30.63	-0.94	-3.0	OTC	8.75	4.88	MICROPOLIS CORP.	6.94	0.31	4.7						
OTC	34.50	17.25	ALOUS CORP.	31.50	0.13	0.4	OTC	22.50	10.00	PINNACLE MICRO INC.	13.00	-0.75	-5.5						
OTC	8.13	4.38	AMERICAN SOFTWARE INC.	4.50	0.00	0.0	OTC	18.50	6.25	PRINTRONIX INC. (H)	18.50	2.25	13.8						
OTC	15.75	6.75	ASK COMPUTER SYSTEMS	13.00	0.00	0.0	NYS	11.75	6.88	QMS INC.	10.00	0.00	0.0						
OTC	66.00	37.00	AUTODESK INC. (H)	60.75	-1.84	-2.9	OTC	20.25	9.38	QUANTUM CORP.	15.00	-1.13	-7.0						
OTC	4.25	1.75	BACHMAN INFO. SYSTEMS	2.25	-0.13	-5.3	OTC	18.25	7.25	RADIUS INC.	10.00	0.63	6.7						
OTC	30.00	20.50	8GS SYSTEMS INC.	24.00	0.75	3.2	NYS	17.75	6.75	RECOGNITION INTERNATIONAL	7.38	0.25	3.5						
OTC	71.00	40.50	8MC SOFTWARE INC.	44.25	-5.25	-10.6	OTC	6.88	3.63	REXON INC.	5.00	0.25	5.3						
OTC	30.75	22.50	8OOLE & 8ABBAGE	28.75	0.25	0.9	OTC	28.75	16.25	SEAGATE TECHNOLOGY	23.25	-1.75	-7.0						
OTC	18.50	8.50	8ORLAND INT'L INC.	13.00	-0.63	-4.6	NYS	41.50	23.75	STORAGE TECHNOLOGY	34.00	-2.38	-6.5						
OTC	25.00	6.75	8ROCK CONTROL SYSTEMS INC.	10.25	0.13	1.2	NYS	34.50	21.38	TEKTRONIX INC. (H)	33.75	1.25	3.8						
OTC	4.63	2.38	CE SOFTWARE	2.75	0.00	0.0	NYS	109.38	69.88	XEROX CORP. (H)	106.88	-0.75	-0.7						
ASE	30.34	6.25	CHEYENNE SOFTWARE INC.	11.88	-0.75	-5.9	Services										UP 1.07%</		



# PeopleSoft answers 4 critical client/server questions. (No asterisks, no equivocations.)

1. How many years of client/server experience do you have?

6

2. Do you have both financial and human resources applications available and in production?

Yes

3. Are all your applications developed from the ground up for client/server?

Yes

4. How many RDBMS platforms do your applications run on?

6

Ask other client/server vendors those questions. You'll find that most of them are still new to client/server. And not prepared to support you in a client/server environment.

At PeopleSoft, we'll give you direct answers to your questions. You'll find our open client/server solutions are in production. Today. At companies who are benefiting from our six years of experience with client/server software.

Only PeopleSoft applications give you a choice of six RDBMS platforms. So you can use the same applications whether you're upsizing to a mainframe, downsizing to a LAN, or rightsizing to anything in between. We build on the best of

today's technology to reengineer traditional business systems. And deliver scalable, functionally innovative applications developed specifically for client/server and Windows.

That's why PeopleSoft client/server financial and human resource applications are the choice of 355 companies worldwide. (As of March 1994.) With more signing up every day. Our white paper, *Client/Server Business Solutions*, has the facts. For a free copy, and a schedule of our client/server seminars, please call us at 800/947-7753.

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## Telecommuting

CONTINUED FROM PAGE 1

pollution areas to reduce single-occupant automobile trips by their employees during peak hours. Specific rules are set by state environmental agencies.

Many employers will first look to car pools and mass transit subsidies, but they will also want to add telecommuting to their mix of remedies, experts said.

"Telecommuting is the only trip-reduction measure that employees really like and will do without cajoling from management," observed telework consultant Gil Gordon in Monmouth Junction, N.J. "And it is the only one that offers direct benefits to the employer, such as reduced office space and improved recruitment and retention of employees."

Gordon said the clean air rules have stimulated more corporate interest in telecommuting but the law is just one of several motivators.

"Firms that would adopt telecommuting just out of a sense of regulatory compliance are missing the boat about the real benefits," he said.

Nevertheless, by Nov. 15, firms with more than 100 employees are supposed to file "employee trip reduction"

plans showing they will be in compliance by Nov. 15, 1996. Violators will face penalties, which vary by state, ranging from \$5,000 a month to \$25,000 a day.

Whether clean air rules are a major or minor factor in telecommuting initiatives seems to vary by company. At San Francisco-based Bank of America, where 1,200 of the company's 96,000 employees are telecommuters, compliance is just "one small part of the reason we have

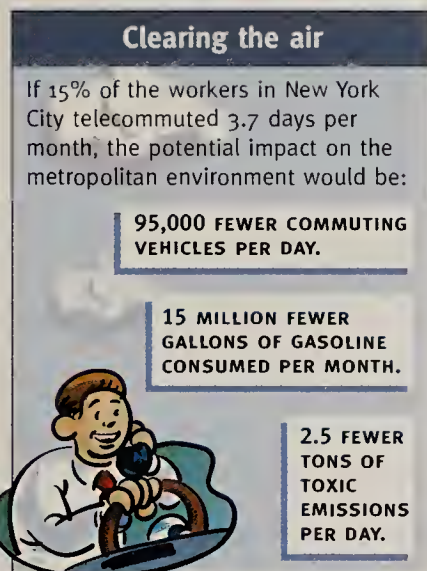
a program, with the emphasis on small. It's one of the side benefits," a spokesman said.

HP lies at the other end of the spectrum. Jerry Cashman, manager of HP's work options program, said federal, state and local clean air regulations "were definitely a large part of why HP got involved." About 5% or more of HP's U.S. work force telecommutes at least one day a week.

Studies show that telecommuters in the U.S. number about 2 million; that could grow to 3 million by 1997. More businesses are planning to embrace telecommuting to improve productivity, reduce overhead and comply with clean air laws, noted

Rebecca Thompson, an analyst at Dataquest, Inc. in San Jose, Calif.

Of course, telecommuting has potential downsides too, such as isolating workers from their office-bound peers and supervisors. John Woods, systems specialist



## Remote control

Fortunately, new products are arriving on the market to help information systems departments support telecommuters. This week, for example, Traveling Software, Inc. will introduce LapLink for Windows to provide remote access to the corporate network for speedy file transfers (see story page 32).

Because the \$200 LapLink package supports multiple sessions over multiple lines, it should also be a boon to help desk and network administrators who can now take over a remote PC electronically and make fixes.

There are several competitors in the remote-control market, including Symantec Corp.'s PCAnywhere and Norton-Lambert, Inc.'s ZClose Up. But LapLink for Windows is the first to combine remote control with remote synchronization in one package.

—Michael Fitzgerald

at Chevron Information Technology Co., said he feels more productive when telecommuting. But the drawbacks include lack of human contact and the inability to gain access to some large computer files.

Senior editor Michael Fitzgerald contributed to this report.

## SAP success

CONTINUED FROM PAGE 1

manufacturing functions. R/3 projects are massive, with the typical contract weighing in at about \$1 million.

"I have no problem with the software;

it's having sufficient people in the field," said Chris Witham, vice president of information management at Hercules, Inc. in Wilmington, Del., an R/3 customer. "It just takes time."

Gartner Group, Inc., a Stamford, Conn., consultancy, is warning clients of the expertise shortage should they consider SAP.

## R/2 detour

As SAP's R/3 client/server software basked in the spotlight at the Sapphire International '94 annual user conference last week, some R/2 mainframe customers worried about SAP's attention to their legacy systems.

"For [those of] us with major investments in R/2, it's a major concern. More and more resources are going to R/3," said Jack Spurgeon, vice president and director of systems and computer services at Eastman Chemical Co.

Eastman Chemical is still in the process of implementing R/2, which relies on a similar integrated suite concept. The company also has a small R/3 installation.

"They continue to assure us they will not stop supporting it," Spurgeon said, but he added that an R/2 transportation module has been promised for some time and is still missing.

Last week, SAP officials reiterated their commitment to support R/2, which has a worldwide customer base of about 2,100, until at least the year 2000. SAP also plans another release

of technical updates. But company officials are making it clear that R/3 is their strategic direction.

Hasso Plattner, co-founder of SAP and vice chairman, said Release 3.0 of R/3, scheduled for next year, will "surpass the functionality of R/2, and for those of you with R/2 installed, you know what that means."

"We can't do anything really sensational with the mainframe anymore," Plattner added.

Claire Gillan, an analyst at International Data Corp. in Framingham, Mass., said R/2 customers face the same issues any legacy system user faces. "They know the supplier is focusing on the strategic new technology," Gillan noted.

Maybe so. But some users last week wanted to remind SAP that their concerns are critical as well.

"They have to continue to step up and continue to support it," said Cinda Hallman, vice president of IS at Du Pont Co., an R/2 customer since the early 1980s. "We are going to be there for a long time."

—Rosemary Cafasso

"Our advice is because of the surge in demand and the already strained infrastructure, those pressures will be more acute," said Jeff Comport, a research director at Gartner.

Similar to other client/server application vendors, SAP is profiting from two industry trends: downsizing and re-engineering.

SAP last week announced worldwide revenue of \$413 million for the first half of this year—an amount 50% higher than the total for the first half of last year. An exact breakdown was not available, but the bulk of those sales came from its client/server business, company officials said.

### Classic approach

While many software companies have made a lot of noise and played up the sexy technology of client/server computing, SAP has zeroed in on classic information systems concerns.

"Their biggest appeal is they go into companies running old nonintegrated mainframe apps and who are ready to move," said Bobby Cameron, a senior analyst at Forrester Research, Inc. in Cambridge, Mass.

Industry observers said the vendor plays to a large company's need for such traditional requirements as processing performance as well as to the desire for an integrated, consistent approach to applications.

Merisel, Inc. in El Segundo, Calif., a \$5 billion computer systems distributor, selected R/3 for worldwide operations after a long evaluation process that came down to a choice between SAP and Oracle, said Frank de Windt, vice president of information and technology. De Windt said Merisel picked R/3 for core IS and business concerns that included applica-

tion integration and the flexibility to "meet rapid change."

To deal with the consulting support shortages, SAP officials said they are continuing to add both consulting partners and additional support services. For instance, the company said last week it will supplement its current offerings with an interactive remote consulting service based on Intel Corp.'s Proshare Video System 200 technology.

Other issues loom for SAP as well, such as mounting competition in the client/server market for business applications. SAP's particular concern is Oracle, which is engaged in what Comport calls "a real dogfight" with SAP.

An Oracle spokeswoman said while SAP may have sold its software to 1,800 customers, Oracle claims to have 1,500 sites in production mode. SAP, on the other hand, can point to only a small portion of its base as full-blown production sites—about 400 worldwide.

Another issue is R/3 itself. The catch to its fully integrated suite approach is the complexity and difficulty of installation, which lessens its appeal below the level of top-tier large corporations. To combat this, the company recently started shipping Special Delivery, a bundled system that comes with hardware, software and consulting services for a fixed price of \$500,000.

SAP also has plans for an "R/3 lite," scheduled for shipment sometime next year. The software, code-named "Heidelberg," will run on Microsoft Corp.'s upcoming Chicago operating system and use the Oracle workgroup server database, said Hasso Plattner, a co-founder and vice chairman of SAP. No pricing was available, but the system will target companies with \$50 million or less in revenue.



WYSIWYG



## Wacky definitions

**bells and whistles:** *n.*  
Noisy peripherals that distract the purchaser's attention from the price.

**digithead:** *n.*  
A person who dismisses as unworthy any creative idea that cannot readily be expressed in mathematical formulas.

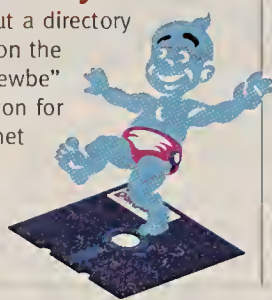
**infostructure:** *n.*  
The electronically assisted system of people, computers, faxes, voice mail and cellular phones by which managers receive and misinterpret information.

Source: *Business Bobble: A Cynic's Dictionary of Corporate Jargon*, by David Olive (John Wiley & Sons, Inc.)

## Great names

### Gregory Newby

Newby puts out a directory of directories on the Internet. (A "newbe" is Internet jargon for a novice Internet user.)



## When men were men and computers were computers

In Kurt Vonnegut's 1952 novel *Player Piano*, the Shah of Bratpuhr is taken to see EPICAC XIV, the computer that runs the U.S. industrial juggernaut in the distant future. According to Halyard, the Shah's escort, EPICAC is "an electronic computing machine — a brain, if you like. This chamber alone, the smallest of the 31 used, contains enough wire to reach from here to the moon four times. There are more vacuum tubes in the entire instrument than there were vacuum tubes in the state of New York before World War II."

## A most preposterous user request

"At a former job I had with a university, a user requested that I print about 10 pages of zeros on the computer for her. The reason? So she could cut them out and paste them over a report. The report had been created by a programmer who said he could not get rid of rounding errors. I solved the problem a bit differently. I went to the programmer, and we fixed his code instead of printing out the page of zeros. Maybe this wasn't a preposterous user request but a preposterous programmer!"

**Larry Miller**  
Manager, Boeing Computer Services, Seattle

WYSIWYG COMPILED BY LORY DIX. ILLUSTRATION AND DESIGN BY DAVE MARSHALL

## Inside Lines

### Schwabbing the decks

Two of the key executives driving Charles Schwab's pioneering migration to a distributed computing architecture — Shelly Anderson, senior vice president of technology, and Jim White, vice president of technical planning — recently left the brokerage. Schwab cited "personal reasons" for the departures and insisted it remains on track for completing the hardware portion of the project during 1996. Some application development could take longer, the spokesman acknowledged, and one unspecified element of the plan is being reevaluated. Schwab has also clamped a cone of silence over its usually outgoing IS department. All inquiries were referred to a corporate spokesman, who said IS lips had been zipped because Schwab is "tired of dropping bread crumbs behind us so competitors can follow where we're going."

### Digital prepares for Alpha's advance

Digital is gearing up for a "major advancement in Alpha AXP technology" this week. According to one analyst, it is likely to be the 21164, or EV-5, microprocessor, the follow-on to the 21064 chip. The processor will likely make its debut in workstations and in the high-end DEC 7000 Alpha AXP multiprocessor server. The chip, which will come in 266-MHz and 300-MHz versions, is a four-way superscalar processor — which means it can issue twice as many instructions at a time as its predecessor.

### Rescue rangers gear up for re-engineering

Having noticed that "one out of seven or eight callers" complain about failed re-engineering programs, CSC Index in Cambridge, Mass., is launching a re-engineering rescue practice to be headed up by Judy Rosen, CSC senior vice president. Among other things, Rosen says CSC consultants-cum-therapists will help frustrated re-engineerers "deal with living with ambiguity and get comfortable with living amidst uncertainty."

### AnyLan may be in NowhereLAN for IBM

Several sources last week reported that IBM was losing its luster for 100VG-AnyLan — Hewlett-Packard's 100M bit/sec. networking technology — in favor of 25M bit/sec. ATM. Not true, Big Blue said. "We haven't backed off VG at all. We're still actively working with HP on standards," said Laura Knapp, senior systems adviser at IBM's networking division in Research Triangle Park, N.C. However, Knapp admitted IBM is disappointed in the amount of customer support needed for the technology. "100VG will have a market, but it will be much smaller than originally anticipated," she said.

### Acrobat swings toward standard

Adobe Systems next week will finally do what a lot of people think it should have done in the first place: give away its Acrobat document exchange. The company will announce a stripped-down free-ware version of Acrobat Reader in an effort to establish the portable WYSIWYG viewer as an industry standard. A full-featured version of Acrobat containing Verity Corp.'s search engine, utilities for converting documents into Exchange format and readers for multiple platforms will sell for \$195. Adobe will also introduce professional and workgroup versions of Acrobat and a set of APIs that let third parties integrate the software into other products.

*Which sports figure would you guess has had the most negative publicity for off-the-field incidents? No, it's not anyone nicknamed Juice. The heavyweight is Mike Tyson with 9,906 stories. The other guy ranks second with 6,754 stories and counting. This tidbit is brought to you by Mead Data Central, which bills itself as "the world's leading provider of intelligent information services." Gotta wonder about that. But if you have something really intelligent to share, please contact Computerworld with your news items or tips. You can call our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News editor Maryfran Johnson can be reached by phone at (508) 820-8179, via the Internet at mjohnson@cw.com or through MCI Mail at 590-8017.*

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# Why would KPMG Peat Marwick's Government Services practice want to move CICS applications to an open environment?

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This could easily have been a story about the customers who got away. Except they didn't get away. Because the Government Services Practice of KPMG Peat Marwick made a strategic decision to move their key product, FAMIS – a financial and accounting package developed for use on IBM mainframes – to the UNIX\* platform. That way, Peat Marwick reasoned, they'd be able to satisfy their clients' demand for open systems applications. And keep them from becoming ex-clients. And it worked. Thanks in no small part to UniKix Technologies.

We'll let Bill Blaustein, a Principal of the Government Services Practice, tell the story:

"It's so incredibly easy, we are now able to do it in our spare time.

"KPMG Peat Marwick has long been the dominant vendor in the government market. In fact, we introduced FAMIS to our clients in the early 1970's, when many were IBM mainframe customers.

"But technology changes. And by 1992, we found ourselves faced with the unfortunate reality that our product was linked to a technology that was highly proprietary and not at all cost effective.

"Of various companies in the CICS downsizing business, UniKix Technologies was the only vendor who could move source code without having to change or re-write it. We checked their references and found that they were every bit as good as we thought,



and great with service and support.

"The results were that in two weeks, without any prior UNIX or UniKix experience, we moved 300 programs from the mainframe to a UNIX environment without a single code modification.



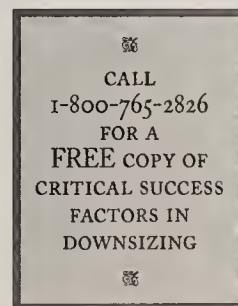
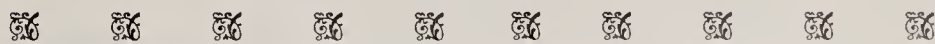
BILL BLAUSTEIN

"We were able to immediately begin selling the product in this new configuration. In fact, we promptly sold an existing client who otherwise would have become an ex-client. And we are now able to participate in bids that we had to pass up before.

"UniKix Technologies provided us with a competitive advantage thanks to their UniKix solution, and we look forward to continuing suc-

cess well into the 21st Century."

If you think your business could benefit from a similar advantage, we suggest you call UniKix Technologies at 1-800-765-2826 for a free copy of *Critical Success Factors in Downsizing*.



Please rush me a FREE copy.

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